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SYSTEM AND FORCE STRUCTURE COST ANALYSIS MODEL (SAFSCAM) USER'S--ETC(U)
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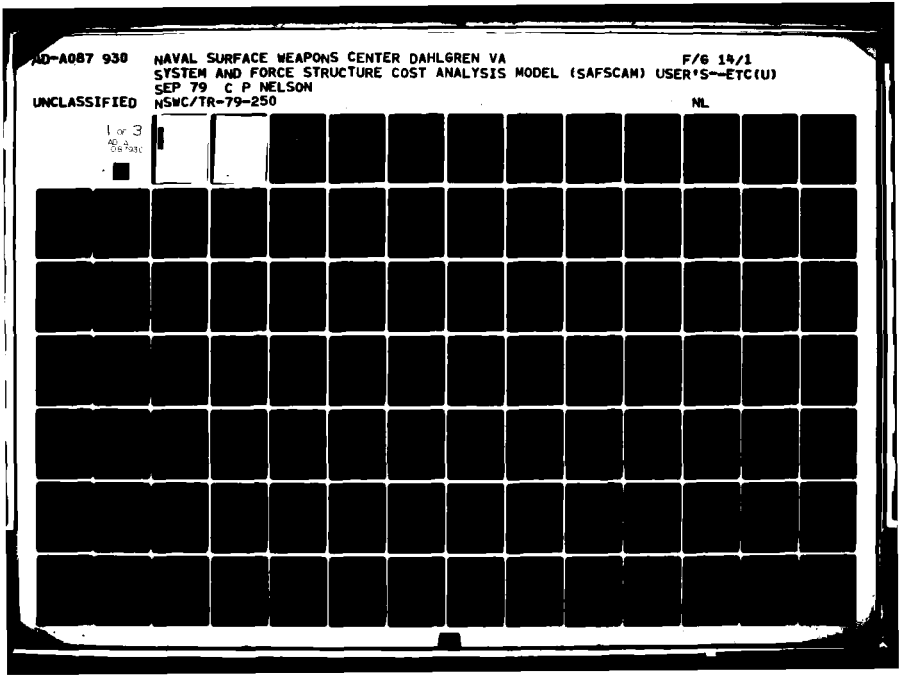

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The System and Force Structure Cost Analysis Model (SAFSCAM) is a flexible computer model that is used to facilitate cost estimation and evaluation. This report describes, in detail, the input and output of the model SAFSCAM that is programmed on the CDC 6700 computer at the Naval Surface Weapons Center (NSWC), Dahlgren, Virginia.

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20. ABSTRACT (Continued)

In one computer run, SAFSCAM estimates and displays the static costs of the equipment and weapon systems relative to a specific fleet composition. The output includes four types of cost charts: the cost breakdown structure (CBS) elements by equipment for all ships in the fleet, the CBS elements by equipment for one ship in each class, the CBS elements for all ships in each class, and a summary of costs by ship class, equipment, contractor or government, and budget appropriation. The user has complete flexibility in the choice of the CBS, the level of detail to be costed, and the cost methodology. The model can use throughput costs and generate costs from cost estimating relationships (CERs).

FOREWORD

The Combat Systems Department of the Naval Surface Weapons Center, Dahlgren, Virginia, was tasked by the Shipboard Intermediate Range Combat System (SIRCS) program office, PMS 404-40, to develop a computer model for use in estimating SIRCS life-cycle costs (LCCS).

The System and Force Structure Cost Analysis Model (SAFSCAM) was designed to meet this requirement. SAFSCAM development began in September 1976, by the late Dr. Barbara J. Bell, Combat Systems Department and Cornelia C. Mundy, Strategic Systems Department. It has been maintained and expanded by Michael R. Pabrinkis, Strategic Systems Department, and Carolyn P. Nelson, Combat Systems Department with direction from Alan R. Glazman, Combat Systems Department.

This technical report is the SAFSCAM User's Guide. It describes the model in terms of types of input data required, input formats, and output charts. Model documentation also includes a SAFSCAM Management Guide.

This report has been reviewed for accuracy by Alan R. Glazman.

Released by:

GERALD O. MILLER, Head
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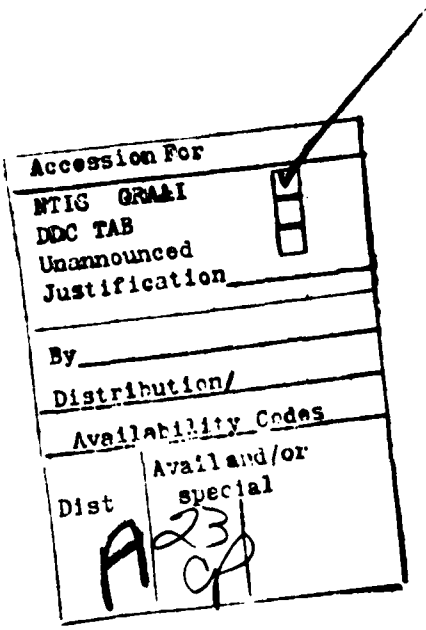

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SUMMARY

The System and Force Structure Cost Analysis Model (SAFSCAM) is a flexible computerized model that will be used by the Navy to facilitate weapon system life-cycle cost (LCC) estimates. SAFSCAM's basic purpose is to process and display equipment and weapon LCCs at the level of detail that will provide government program managers with the in-depth cost visibility required for orderly program planning and decision making.

To date, the model has generated weapon system LCC estimates for the Shipboard Intermediate Range Combat System (SIRCS) and the anti-ship missile defense (ASMD) programs. For these programs, the model proved useful in the following ways:

- Standardization of contractor estimates
- Independent cost capability
- Well-organized display of ship class and fleet LCC cost
- Concise display of LCC by budget appropriations
- Test the effects of programmatic changes
- Aid to performing top level trade-offs to system design

This report will describe the input and output of SAFSCAM in sufficient detail to allow the user to employ the model for cost estimation, evaluation, and analysis.

INTRODUCTION

BACKGROUND

SAFSCAM has a basis in the System LCC Model developed in 1975, for the ROLAND program office at the Missile Command (MICOM), Redstone Arsenal, Huntsville, Alabama. This model was designed to cost the ROLAND program. Its input and output formats and internal logic were specific to the costing needs of the ROLAND program; however, the model contained many of the features needed in a comprehensive cost model. Since the ROLAND model was programmed in FORTRAN IV on the CDC 7600 computer, and NSWC has a similar CDC 6700 computer, it was a logical candidate for the SIRCS program. The ROLAND model also has the ability to display, in one computer output, the costs by cost breakdown structure (CBS) for each equipment element in a weapon system. Thus, the costs of a total Navy system can be displayed. The model has been modified and expanded by the System's Cost and Simulation Branch, Combat Systems Department to make it a generalized LCC model.

SAFSCAM documentation consists of comments in the FORTRAN coding, the *User's Guide*, and the *Management Summary*.

CAPABILITIES

SAFSCAM's basic capability is that of processing and displaying equipment and weapon system LCC so that fast, flexible, and documented cost analyses can be performed. It allows the user complete flexibility in the choice of CBS elements to be displayed, the level of detail to be costed, and the cost methodology used to estimate system LCCs. The CBS is a data input to the model, and it is the same for each equipment element. SAFSCAM has the flexibility in the level of detail at which costs are estimated for any CBS element. Several subelements can be costed separately and then summed internally in the model to estimate the cost of a CBS element.

The model can use throughput costs or costs developed from cost estimating relationships (CERs).* The throughput costs are those developed external to the model. CER forms are in the program code permitting parameter input to use a CER for a particular equipment and CBS element application. Learning curve theory is available within the CER forms to develop costs at any production quantity from a cost at another quantity. The production quantity for each equipment element can be calculated from input data. Costs for each CBS element can be assigned to budget appropriations.

At present, SAFSCAM output includes four major cost charts. The first chart gives a breakdown by equipment of the cost for each element in the CBS. The second set of charts shows the LCC by equipment per ship. The third chart gives the LCC summed over all equipment elements per ship class. The fourth chart gives a summary of costs per ship class by budget appropriations.

MODEL DESCRIPTION

SAFSCAM is programmed in FORTRAN IV EXTENDED with one small COMPASS subroutine. It is currently running on the CDC 6700 under the SCOPE 3.4 operating system. There are 16 subroutines and 1 function that requires approximately 150,000 octal words of central memory. Execution time varies from 3 to 300 seconds (s) depending on the size of the input. SAFSCAM is configured to consider 43 ship classes and 40 different equipments; however, it has been demonstrated that it can cost-out 100 equipments across 9 ship classes with minor changes to certain arrays. It is also possible to input equipment at the ship level and equipment components at the equipment level; thus, causing the model to cost many components across several equipment

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* A CER is a linear or nonlinear regression equation. It relates the cost of a product to some measurable characteristic such as weight, speed, range (cost-to-noncost), or with costs of other items (cost-to-cost). CERs may be developed from historical data.

configurations. Appendix A is a listing and further description of the SAFSCAM subroutines.

Figure 1 is a flow chart of SAFSCAM's major functions. It gives a broad description of how the model starts with input data, processes this data in several ways, and generates four major LCC charts. This report addresses SAFSCAM's input and output in sections labeled accordingly.

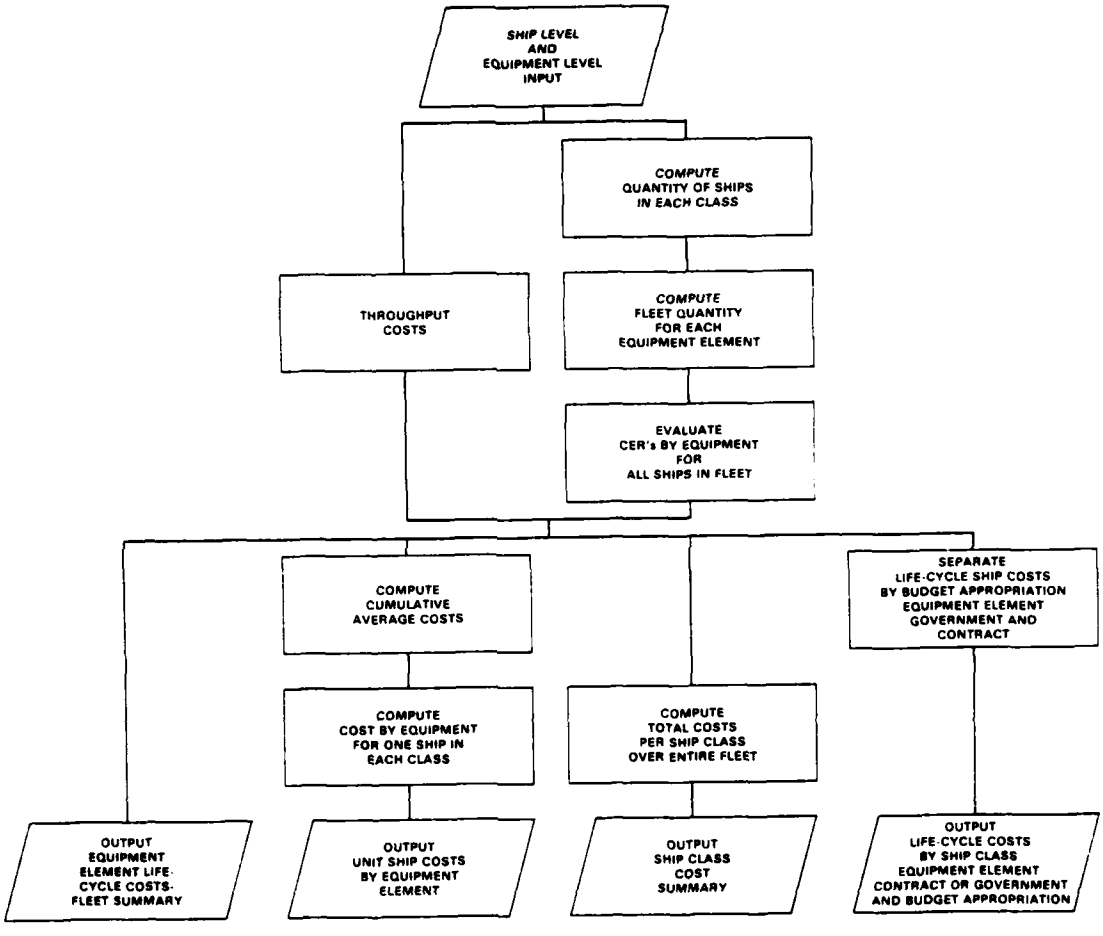


Figure 1. Major Functions of SAFSCAM

INPUT

This section of the *User's Guide* describes the input requirements of the model along with the mechanics of the cost estimating methodology. There are two basic levels of inputs needed for SAFSCAM: ship level (SL) and equipment level (EL) as shown in Figure 2.

The SL inputs are those that are independent of the equipment selected. These inputs include varying types of noncost information such as CBS, unit flyaway data, and installation schedule. The major portion of the input

is at the EL that includes equipment elements, quantities per ship, and equipment cost data.

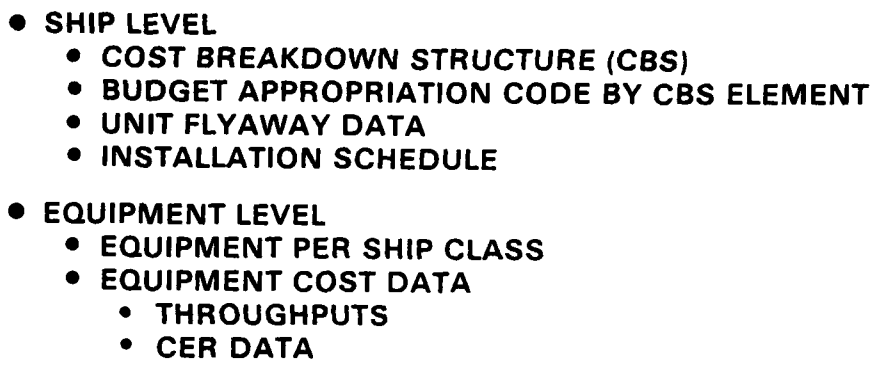


Figure 2. SAFSCAM Input Levels

The input will be described in the same order as it is read by subroutine INPUPD.

1. Title and controls
2. Phase (SL)
3. CBS (SL)
4. Equipment elements per ship (EL)
5. Equipment element cost data
   a. Throughput cost (EL)
   b. CER data (EL)
6. Output control
7. Ship installation schedule (SL)
8. Unit flyaway data (SL)
9. Footnotes

Appendix B is the input format in summary form for easy use. The entire input stream is listed by the model as output and is given as a sample run in Appendix C.

TITLE AND CONTROLS

The first card of the input is the TITLE that identifies the case run. Its contents are the user's choice. The title can be coded anywhere in the first 26 columns. The second card, CONTROLS, provides some of the necessary controls for execution (see Table 1).

Table 1. Format for Title and Controls*

Card Types	Input	Card Columns	Format
1	TITLE	1-26	2A10, A6
2	NWBS	1-5	I5
	NPH	6-10	I5
	IPB(1)	11-15	I5
	IPB(2)	16-20	I5
	IPB(3)	21-25	I5

* TITLE defines the case run.
NWBS is the number of elements in the CBS.
NPH defines the number of life-cycle phases.
IPB(1), IPB(2), IPB(3) define the CBS element number at which a page break will occur in the output charts.

PHASE

The titles of the LCC phases, the first element number of the phases, and ROLLUP controls are defined on the PHASE cards. ROLLUP controls (NROLL) are the lowest cost levels for each phase at which the major LCC charts will be printed. The CBS can be input in great detail; however, the major cost charts may be desired at a reduced level. ROLLUP controls together with the cost level print control in the Output Control section provide for this reduced CBS level printout. The model allows up to four LCC phases (4 cards) as input (see Table 2). The standard breakdown is RDT&E, Investment, and Operations and Support.

Table 2. Format for Phase*

Card Type	Input	Card Columns	Format
3	IPHASE (1, K)	1-10	A10
	IPHASE (2, K)	11-20	A10
	IPH (K)	21-25	I5
	NROLL (K)	26-30	I5

* IPHASE (1, K) and IPHASE (2, K) define the Kth phase in two words (K takes on the values 1 to 4 depending on the phase that is being input).
IPH (K) identifies the first CBS element number of the Kth phase.
NROLL (K) defines the lowest cost element level to be printed in the output cards.

Figure 3 is an example of the first three types of input cards.

```
TEST CASE DATA

   148    4    35    68    108

RDT&E                          1    2
PILOT PRODUCTION              36    3
FULL PRODUCTION               69    3
OPERATION & SUPPORT          109    2
```

Figure 3. Title, Controls, and Phases

COST BREAKDOWN STRUCTURE

The CBS defines, in detail, the elements of the LCC phases of a program. The user must determine the elements to be included in the CBS. The elements would then be structured into a cost hierarchy indicating the relationship of each element to the entire CBS. An abbreviated list of CBS elements is given in Table 3. Some of the elements in the CBS are costed directly from input data as throughput costs or costed through the use of CERs. Costs for other CBS elements are the summation of costs for lower level elements.

Table 3. Cost Breakdown Structure

Element No.	Appropriation Code	CBS Element	Element No.	Cost Level
(1)	RDT&E	RDT&E phase	1	1
(2)		Investment phase	2	1
(3)	PROC	Nonrecurring	3	2
(4)		Recurring	4	2
(5)	PROC	Contractor	5	3
(6)	PROC	Government	6	3
(7)	OMN	Operations and support phase	7	1
(8)		Total	8	1

The inputs for each CBS element are the element number, the budget appropriation code, the element name, and the cost level (see Table 4).

Table 4. Format for CBS*

Card Types	Input	Card Columns	Format
4	SYSTEM	1-10	A10
	System name (e.g., SAFSCAM)	11-20	A10
5	TPUT	1-10	A10
6	CBS element number	1-20	2A10
	Budget appropriation code(s)	21-30	A10
	CBS element name	31-60	3A10
	CBS element number	61-70	A10
	Cost level	71-72	A2

* SYSTEM must be the first word of the system name card. System name defines the name of the particular system that is being costed.
TPUT is input at this position to act as a signal to the model that a certain type of input will follow; namely, the CBS.
CBS element number is a unique identifier used in relating a throughput cost or CER cost data to a specific CBS element. The element number is an input in either the throughput or CER sections of the input data.
Budget appropriation code indicates the budget appropriation to which the cost of a CBS element should be allocated. These appropriations are research development, test and evaluation (RDT&E),

procurement (PROC), military construction-Navy (MCN), military personnel-Navy (MPN), and operations and maintenance-Navy (OMN). The PROC code may be further broken down to ship construction-Navy (SCN), weapon procurement-Navy (WPN) and other procurement Navy (OPN). This breakdown gives greater flexibility to the budget chart allowing for each equipment on each ship class to be assigned a different PROC code. Input of this breakdown occurs in the Equipment Elements per Ship section. A CBS element cost can be assigned to a single appropriation such as RTD&E or divided between two appropriations. If a CBS element cost is divided between two appropriations, this is indicated by RD/PR, PR/MC, MP/OM, etc.

CBS element name is a description of what costs are included for that CBS element.

CBS cost level (1-10) indicates the position of an element relative to the total structure of the CBS hierarchy. Lower-level costs (indicated by a higher cost level number) will be summed to all successively higher cost levels. For example, in Table 3, recurring contractor and government costs (cost level 3) will be summed to give total recurring investment cost (cost level 2).

Guidelines

The following guidelines should be used in developing the CBS.

1. Card type 6 is repeated for each element in the CBS.

2. Input data may be positioned in any of the columns within the appropriate fields. The system name and CBS element name can contain alphabetic, numeric, or special characters.

3. The designation of the CBS element number in columns 1-20 of card type 6 must begin with an open parenthesis and end with a closed parenthesis. Blanks are allowed before and after the element number within these parentheses. For example, "(15)" is valid.

4. The order of the CBS input will be the order in which the CBS elements will be displayed in the output charts. The CBS elements must be in a logical sequence, so that lower-level costs will be summed to the proper higher-level costs.

5. The CBS can have a maximum of 150 elements including the total. The allowable number of CBS elements can be increased, if necessary, by changing the record length in the FORTRAN coding.

6. The CBS applies to all equipment elements. If there is no cost data for a CBS element, a zero will be shown in the cost output charts.

7. The CBS element names can be indented to indicate the cost hierarchy. This indentation is not required.

8. Each CBS element must have an element number. This number is used to relate cost data to a CBS element.

9. Each CBS element must have a cost level (1-10). Lower-level costs (indicated by a higher cost level number) will be summed to all successively higher cost levels.

10. Each directly costed CBS element should have a code or codes indicating the budget appropriations to which the cost will be allocated. If no code is given, the cost will not be included in the LCC by the budger appropriations output chart. The cost of a CBS element can be allocated to one budget appropriation or divided between two appropriations. The desired split between appropriations is indicated by (1) the first two letters of each code separated by a "/" (e.g., RD/OM indicates that the cost will be divided between the RDT&E and OMN appropriations) and (2) the percentage of the cost allocated to each appropriation. These percentages are designated in a data statement in INPUDD.

11. A CBS element can have CONTRACTOR or GOVERNMENT as the first word of its name. This indicates how the cost is allocated in the LCC by budget appropriations output chart. If the cost is a summation of lower-level costs, all lower-level costs will be allocated appropriately to either CONTRACTOR or GOVERNMENT. These lower-level CBS elements should not have CONTRACTOR or GOVERNMENT as the first word of their names. If a CBS element has a budget appropriation code, but is not identified as contractor or government, the cost is added to the contractor cost for the particular appropriation codes.

EQUIPMENT ELEMENTS PER SHIP

The equipment elements to be installed and operated on each ship in a class are defined in this section of input. This input and the Ship Installation Schedule will be used to generate the total operational and investment equipment quantities for use in some of the cost output charts. Table 5 gives an example of the input for the ship class name and the name and quantities of the equipment to be installed and operated on each ship of that class (see Table 6).

Guidelines

The following guidelines should be observed for the equipment elements per ship input.

1. The input sequence is a card giving the ship class name followed by a card for each of the equipment elements on the ship class.

2. The investment quantity will be less than the operational quantity when some of the equipment has previously been installed on the ship.

3. It is assumed that all ships in a class have the same equipment and operational and investment quantities. If any ship in a class has unique equipment or quantities, the user can give this ship a unique class name (e.g., HOC-A) and list the equipment peculiar to that ship.

4. The maximum number of ship classes and equipment elements are: 43 ship classes, 29 equipment elements per ship class, and 40 unique equipment elements over all ship classes. (Coding changes may be made to alter this requirement).

5. The ship class name is preceded by the word, SHIPCLASS and the equipment element name is preceded by the word, EQUIPMENT. These words are required. The FORTRAN coding recognizes these words as indications that the following words are the name of a ship class or equipment element. The SHIPCLASS and EQUIPMENT cards (card types 8 and 9) are repeated until all ship classes and their equipments have been defined.

6. The ship class and equipment element names from this section of input will be used in the titles of the cost output charts. The names should be centered in the fields on card types 8 and 9 exactly as desired on the output charts. For example, first radar could be coded on card type 9 as FIRST and RADAR. On the output charts, this would appear as a two-line column heading FIRST.
RADAR

7. All ship class and equipment element names are read by the input editor subroutine INPUPD as strings of seven characters. Any alphabetic, numeric, or special character is valid. Where an equipment element name is best described by two strings (2 words), each word is read as a string of seven characters. This is done to allow names that will not fit in seven characters to be spread over two fields, and later used on two lines in the column headings of the cost output charts.

8. The first six characters of each ship class or equipment element name must be unique. This six-character string will be used to relate equipment elements per ship to the equipment elements' cost data. SAFSCAM forms the six-character string by inspecting the name fields, finding and left-justifying the first nonblank character and the next five characters including blanks with the provision that any string of consecutive interior blanks is compressed into one blank.

Table 5. Equipment Elements per Ship

	Operational Quantity	Investment Quantity	Procurement Breakout
Ship class A	1	1	OPN
Equipment first radar	2	1	SCN
Equipment missile	20	0	WPN
Equipment 4 gun			
Ship class B			
Equipment first radar	1	1	OPN
Equipment missile	40	10	SCN

Table 6. Format for Equipment Elements per Ship*

Card Types	Input	Card Columns	Format
7	NPUT	1-4	A4
8	SHIPCLASS	1-10	A10
	First word of ship class name (e.g., CGN) centered	11-17	A7
	Second word of ship class name (e.g., CLASS) centered	21-27	A7
9	EQUIPMENT	1-10	A10
	First word of equipment element name (e.g., FIRST) centered	11-17	A7
	Second word of equipment Element name (e.g., RADAR) centered	21-27	A7
	Operational quantity per ship	41-45	A5
	Investment quantity per ship	51-59	A9
	SCN, WPN or OPN	61-63	A3
10	$END	1-4	A4

* NPUT is placed on the card preceding all of the equipment elements per ship data to indicate that this particular type of data will follow.
SHIPCLASS is placed in front of the actual name of the ship class to designate the ship class name as a storage key.
EQUIPMENT precedes the name of the equipment to set up the equip ment name as a storage key.
SCN, WPN, or OPN are used to breakout the procurement costs into SCN, WPN, or OPN.
$END indicates the end of the equipment elements per ship data.

As an example of left-justification of the first nonblank character and compression of consecutive interior blanks to form a six-character string, consider the two words in the equipment element name: FIRE and CONTROL. SAFSCAM searches for the first nonblank character "F" and compresses the two blanks following the E to form the left-justified six-character string FIRE C.

An example of invalid names is the designation of two different radars as RADAR ONE and RADAR TWO. The first six characters RADAR are not unique.

EQUIPMENT ELEMENT COST DATA

Equipment element cost data may be entered as throughput or CER data. The method of costing can be different for each equipment element. Cost data for each equipment element is entered only once, even if the equipment is operated on more than one ship class. The order in which the equipment element cost data is entered is the order in which the column headings for the first two sets of cost output charts (Appendix C) will be printed. For each equipment element, the cost data can be placed in the TPUT or CER subsections. Throughput costs are entered in the TPUT subsection; CER cost data are entered in the CER subsection. These subsections can be in any order within an equipment element. For example, the CER subsection can precede the TPUT subsection. SAFSCAM identifies the subsection by the codes TPUT or CER. If there is no cost data for one of these subsections, the code need not be entered. For example, if all CBS elements for FIRST RADAR are costed by CERs, the TPUT subsection can be deleted (see Table 7).

Table 7. Format for Equipment Element Cost Data*

Card Type	Input	Card Columns	Format
11	EQUIPMENT	1-10	A10
	Equipment element name	11-30	2A10

* EQUIPMENT is an identifier to indicate that the cost data to follow will be for the equipment named. Equipment element name is the actual name of the equipment. It must be left-justified. The first six characters of the name must correspond exactly to the left-justified name in the Equipment Elements per Ship section.

Throughput Cost

Throughput cost data are those cost estimates external to SAFSCAM that do not require any calculation by the model for the first cost chart. Examples are costs of representative systems and LCCs that are fixed. For each equipment element, only one throughput cost per CBS element is allowed (see Table 8).

Table 8. Format for Throughput Costs*

Card Types	Input	Card Columns	Format
12	TPUT	1-4	A4
13	CBS element numbers	1-20	2A10
	CBS element cost	21-30	A10
	CBS element cost	31-40	A10
	CBS element cost	41-50	A10
	CBS element cost	51-60	A10
	CBS element cost	61-70	A10
	CBS element cost	71-80	A10

* TPUT indicates that throughput costs are to follow. CBS element numbers are the identifying number of the CBS elements for which costs are being entered. CBS element costs are the actual costs of the CBS element.

Guidelines

1. Card type 13 is repeated until all throughput costs have been entered.

2. Data can be entered in any of the columns within the appropriate fields.

3. The designation of the CBS element numbers in columns 1-20 must begin with an open parenthesis and end with a closed parenthesis. A sequence of numbers within these parentheses is indicated by a dash between the first and last numbers in the sequence (e.g., (4-5) and (7-10).

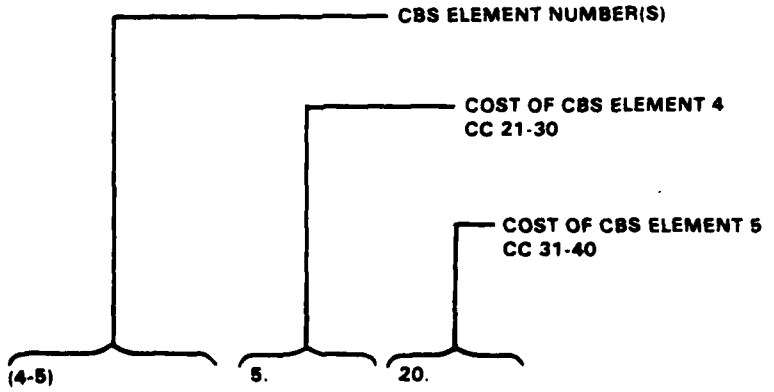
4. A maximum of six costs can be entered on a card.

5. All costs on a card must be for sequential CBS elements and correspond in sequence to the CBS element numbers in columns 1-20. Examples are given below for CBS elements 4-5 and 7-10.

The throughput costs for CBS elements 4 and 5 are 5. and 20., respectively. The (4-5) indicates that the first cost in columns 21-30 will be for CBS element 4, and the next and last cost will be for CBS element 5.

6. An interruption in the CBS element number sequence requires that the next set of throughput costs be entered on another card.

7. Comment cards can be inserted in this subsection by entering an "*" in column 1.



CER Data

The cost of a CBS element can be estimated by a CER. These costs are referred to as CER data (Figure 6). A set of generalized CER equations (Table 9) has been incorporated in the FORTRAN coding. Each CER in Table 9 is a general equation containing no hard-coded parameter values. The set of CERs can be modified or increased by changing the coding in subroutine CERCOMP. In Table 9 each P represents an input parameter. This parameter could be a measureable characteristic or a factor calculated from a prior CER. A factor can be used in the calculation of another factor, until all information has been generated to cost a CBS element or subelement. When a particular cost is defined by a CER, the generalized forms from Table 9 that best suit the CER is chosen. Only the parameters P(1) through P(6) as specified by the cost data and needed by the CER form chosen are input as CER data.

Some of the CERs in Table 9 contain the symbols "Q1" or "Q2". These represent the total operations support quantity and investment quantity, respectively, of an equipment element over all ship classes. The quantities are calculated by SAFSCAM by multiplying the quantity of an equipment element on each ship in a class by the number of ships in that class and then summing over all ship classes (see Table 10).

EQUIPMENT 4 GUN

CER	A	B	C	D	E		F		G	H	I	J
	F	600	26	00	2.129000		1.000000		0.000000	0.000000	0.000000	0.000000
	C	520	26	00	.200000		4.000000		0.000000	0.000000	0.000000	0.000000
	C	530	16	00	.050000	F	50.000000		0.000000	0.000000	0.000000	0.000000
	C	590	16	00	.100000	F	60.000000		0.000000	0.000000	0.000000	0.000000
	C	630	16	00	.100000	F	50.000000		0.000000	0.000000	0.000000	0.000000
	F	470	22	00	40.000000		7.000000		0.000000	0.000000	0.000000	0.000000
	F	60	16	00	.140000		16.200000		0.000000	0.000000	0.000000	0.000000
	F	70	13	00	12.700000	F	6.000000		.022000	2000.000000	0.000000	0.000000
	C	650	26	00	F 47.000000	F	7.000000		0.000000	0.000000	0.000000	0.000000
	C	660	8	650	.090909		0.000000		0.000000	0.000000	0.000000	0.000000
	F	80	18	00	.000400		.000960	F	6.000000	1.230000	0.000000	0.000000
	C	670	26	00	F 8.000000		10.000000		0.000000	0.000000	0.000000	0.000000
	C	691	8	550	.020000		0.000000		0.000000	0.000000	0.000000	0.000000
	C	692	8	670	.020000		0.000000		0.000000	0.000000	0.000000	0.000000
	F	140	26	00	35.000000		1.000000		0.000000	0.000000	0.000000	0.000000
	F	90	8	650	45.454545		0.000000		0.000000	0.000000	0.000000	0.000000
	F	150	16	00	3.500000	F	9.000000		0.000000	0.000000	0.000000	0.000000
	F	160	23	00	F 14.000000	F	15.000000		0.000000	0.000000	0.000000	0.000000
	C	711	13	00	.020000		1.200000	F	14.000000	24.000000	0.000000	0.000000
	C	712	13	00	.022000		1.200000	F	15.000000	24.000000	0.000000	0.000000
	C	713	13	00	.000770		1.000000	F	16.000000	2.000000	0.000000	0.000000
	C	714	13	00	.022000		1.000000	F	16.000000	360.000000	0.000000	0.000000

ECER

A: Cost Element Row Number or Factor Number

B: Designates whether CER value cumulates with another CER

C: CER Number

D: Cost Element Reference, e.g., CER for Row 66 dependent on row 65 computation

E-J: CER parameter values
O: No value entered

Figure 6. CER Cost Data

Table 9. CER Generalized Forms

CER Number	CER Form
1	$C = P(1) \times Q2^{P(2)}$
2	$C = P(1) \times Q2^{P(2)} / P(3)^{P(4)}$
3	$C = P(1) \times P(2)^{P(3)} / P(4)^{P(5)}$
4	$C = P(1) \times ((Q2 + P(2))^{P(3)} - P(2)^{P(3)})$
5	$C = P(1) \times ((Q2 + P(2))^{P(3)} - P(2)^{P(3)}) / P(4)^{P(5)}$
6	$C = P(1) \times ((P(2) + P(3))^{P(4)} - P(3)^{P(4)}) / P(5)^{P(6)}$
7	$C = P(1) \times P(2) \times Q2$
8	C = P(1) x Cross-referenced CBS element cost
9	$C = P(1) \times P(2)^{P(3)} \times Q2^{P(5)}$
10	$C = P(1) \times P(2)^{P(3)} \times P(4)^{P(5)}$
11	$C = P(1) \times P(2)^{P(3)} \times P(4) \times P(5) \times P(6)$
12	$C = P(1) \times P(2) \times P(3) \times P(4)$
13	$C = P(1) \times P(2) \times P(3) / P(4)$
14	$C = P(1) \times P(2) \times P(3) \times P(4) \times P(5) \times P(6)$
15	$C = P(1) \times (P(2) + P(3) + P(4) + P(5) + P(6))$
16	$C = P(1) \times P(2) + P(3) \times P(4) + P(5) \times P(6)$
17	$C = P(1) + P(2) \times P(3)) \times Q2$
18	$C = P(1) + P(2) \times P(3)) \times P(4)$
19	$C = P(1) + P(2) \times P(3)) \times P(4) \times P(5) \times P(6)$
20	$C = P(1) + P(2) \times P(3)) \times P(4) \times P(5)^{P(6)}$
21	$C = P(1) \times P(2) \times P(3)^{P(4)} \times P(5)^{P(6)}$
22	$C = P(1) / (P(2) + P(3) + P(4))$
23	$C = P(1) + P(2) + P(3) + P(4) + P(5) + P(6)$
24	$C = P(1) \times Q1^{P(2)}$
25	$C = P(1) \times P(2)^{P(3)} \times Q1^{P(4)}$
26	$C = P(1) \times P(2) \times P(3) \times Q1$

Table 10. Format for CER Data*

Card Types	Input	Card Columns	Format
14	CER	1-3	A3
15	Calculation type (F = factor, C = CBS element or subelement)	6	A1
	Factor CBS element number	7-9	I3
	CBS subelement number (0 = a factor or no subelement, 1-6 = a subelement)	10	I1
	CER number	11-15	I5
	CBS element cross-reference number	16-19	I4
	CBS subelement cross-reference number (0-no subelement, 1-6 = a subelement)	20	I1
	Factor identification (F = factor, blank = value)	21	A1
	Parameter P(1) (Factor number or value)	22-30	F9.0
	Factor identification	31	A1
	P(2)	32-40	F9.0
	Factor identification	41	A1
	P(3)	42-50	F9.0
	Factor identification	51	A1
	P(4)	52-60	F9.0
	Factor identification	61	A1
	P(5)	62-70	F9.0
	Factor identification	71	A1
	P(6)	72-80	F9.0
16	ECER	1-4	A4
17	$END	1-4	A4

* CER must precede the CER data to indicate that CER cost data will follow.

Calculation type - A CER can calculate either a factor to be used as a parameter in a succeeding CER or the cost of a CBS element (or subelement). A factor is designated by an "F"; a cost is designated by a "C".

Factor or CBS element number specifies either the factor or the line item in the CBS. The factor number is not related to any CBS element. It does not have to be the same as the number of a CBS element for which it is later used as a parameter.

CBS subelement number - A CBS line item can be broken down into a subelement, each of which is costed separately. Up to six subelements are allowed for each CBS element. A subelement cost is indicated by the numbers "1" through "6". Subelements can be costed in any order. The costs for each subelement are added to whatever cost is in the computer storage location for the CBS element. The subelement costs are added to any throughput cost previously entered for the CBS element. A "0" in this field initializes the computer storage location to zero. This is used only when no throughput costs have been entered for this CBS element, and there are no subelements.

CER number - The number of the CER from Table 9 that is to be used in the calculation of this factor or cost.

CBS element cross-reference number is the identification of a previously costed CBS element. It is entered as "0", except when CER 8 is specified. CER 8 costs a CBS element as a function (e.g., percent) of a previously costed CBS element. CBS subelement cross-reference number can be used as a cross-reference. This field identifies the previously costed subelement. A "0" is entered if the reference is to the total cost of a CBS element.

Parameters P(1-6) can be either a value to be used directly in the CER or the number of a factor whose value is to be used in the CER. A factor is identified by entering "F" in the first column of the parameter field. A blank in the first column indicates that the remainder of the field contains a value to be used directly in the CER. Some CERs do not require six parameters. If a parameter is not required, the field should be left blank.

ECER indicates the end of CER data for a particular equipment.

$END signals the end of cost data input for all equipments.

Guidelines

1. The maximum number of CER data cards is 150 per equipment element.

2. Card type 15 is repeated until all CER cost data have been entered. Factors and CBS element costs are calculated according to the input sequence of card type 15's. The sequence is at the user's option, with the following two exceptions:

   a. A factor card must precede any CER cards in which that factor is used as a parameter.

b. A CBS element card must precede any CER cards in which a cross-reference is made to that cost.

3. The CER forms can be adapted by setting some of the parameters equal to 1 or 0. For example, if the CER form, CER = P(1) x P(2), is desired, CER 12 can be used by setting P(3) and P(4) equal to one. If the CER form CER = P(1) + P(2) + P(3) is desired, CER 23 can be used by setting P(4), P(5), and P(6) equal to zero.

4. Costs estimated by CERs can be added to a throughput cost.

An example of inputting CER data is given below. It is for estimating mission hardware production cost for the propulsion section of a missile. The cummulative average unit cost (in thousands of dollars) of 1000 motors (CAC (1000)) is estimated by the CER:

$$CAC(1000) = 0.066 \times I^{0.42}$$

where I is the total impulse in lb/sec

The total production cost could be estimated using the learning curve theory by the CER:

$$CTC = CAC(1000) \times Q^{1+b}/1000^{b}$$

where

CTC = Cummulative total cost

Q = Production quantity

b = learning-curve exponent

If I = 10,000 lb/sec, Q = 2000, and b = 0.152, then CTC = \$5688K. To input these as CER data, CER No. 10 from Table 9 is chosen for CAC(1000) and labeled FACTOR 1.

$$\text{CER No. 10} \quad C = P(1) \times P(2)^{P(3)} \times P(4)^{P(5)}$$

where

P(1) = 0.066

P(2) = 10,000

P(3) = 0.42

P(4) = 1.

P(5) = 1.

FACTOR 1 = $0.066 \times 10{,}000^{0.42} \times 1.^{1.}$

FACTOR 1 = 8.16K

For the CTC, CER No. 2 would be the best choice.

CER No. 2 $C = P(1) \times Q2^{P(2)}/P(3)^{P(4)}$

where

P(1) = FACTOR 1

P(2) = 0.848

P(3) = 1000.

P(4) = 0.152

CTC = FACTOR 1 $\times 2000^{0.848} \times 1000^{0.152}$

CTC = $5688K

Q2 would be internally set to the calculated production quantity (2000).

OUTPUT CONTROL

The major cost output from SAFSCAM consists of four sets of charts. The user selects which cost output charts are to be printed by the output control card. All cost calculations for these four sets of charts are performed and stored regardless of the output control card. Setting the chart control equal to zero causes the particular chart to be printed. Any other number will suppress the printing (see Table 11).

SHIP INSTALLATION SCHEDULE

The ship installation schedule gives by ship class, the number of ships per year, or which equipment will be installed. It provides the fleet composite to be used in computing the total operational and investment quantities over all ship classes for each equipment element. The maximum number of installation years is 12. Installation can be spread over less than 12 years by leaving the appropriate fields blank. An example is given in Table 12, and the format is given in Table 13.

Table 11. Format for CER Data

Card Type	Input	Card Columns	Format
18	Equipment LCC (fleet summary) Chart 5 print control (0 = print chart)	1-3	I3
	Unit ship LCC by equipment Chart 6 print control (0 = print chart)	4-6	I3
	Ship LCC summary Chart 7 print control (0 = print chart)	7-9	I3
	LCC by budget appropriation Chart 8 print control (0 = print chart)	10-12	I3
	Cost level print control (0 = print complete CBS)	13-15	I3

Table 12. Ship Installation Schedule

Ship Classes	1985	1986	1987	1988	1989	1990
DD-963	0	0	1	0	0	0
CGN	0	0	0	0	0	2

Guidelines

1. Card type 21 is entered for each ship class.

2. The first six characters of each ship class name must be left-justified and identical to those in the equipment elements per ship section of input. Identification is made from the unique first six characters of the ship class name.

3. The order in which the ship classes are entered does not have to correspond to the order in the Equipment Elements per Ship section.

Table 13. Format for Ship Installation Schedule*

Card Types	Input	Card Columns	Format
19	Comment card	1-80	8A10
20	NOYRS	1-5	I5
21	Ship class name - left-justified	1-16	A6, 4 X
	Number of ships outfitted in the first year	11-15	I5
	Number of ships outfitted in the twelfth year	66-70	I5

* Comment card allows the user to insert a comment concerning the input data. Its purpose is to separate the ship installation data from the CER data for quick proof checking. NOYRS defines the number of years over which the installation schedule will cover.

UNIT FLYAWAY DATA

The last section of ship level input is the unit flyaway data. It consists of a listing of the CBS element numbers whose costs are to be summed for the unit flyaway costs. Flyaway costs as defined in DOD Instruction 5000.28 are those cost elements that are related to the production of a usable end item of military hardware. Since the number and the arrangement of elements in the CBS can vary to meet user requirements, the numbers of the CBS elements to be included in unit flyaway costs must be provided as input (see Table 14).

Table 14. Format for Unit Flyaway Data

Card Types	Input	Card Columns	Format
22	Comment card	1-80	8A10
23	Number of CBS elements Included in unit flyaway costs	1-5	I5
24	CBS element number	1-5	I5
	CBS element number	6-10	I5
	CBS element number	11-15	I5
	CBS element number	16-20	I5
	CBS element number	21-25	I5
	CBS element number	26-30	I5
	CBS element number	31-35	I5
	CBS element number	36-40	I5
	CBS element number	41-45	I5
	CBS element number	46-50	I5
	CBS element number	51-55	I5
	CBS element number	56-60	I5
	CBS element number	61-65	I5
	CBS element number	66-70	I5
	CBS element number	71-75	I5
	CBS element number	76-80	I5

Card type 25 is repeated until the list of CBS element numbers is complete.

FOOTNOTES

The final section of input to SAFSCAM is the 10 footnote cards. The user has the option of adding footnotes to the first three major output charts. If no footnotes are desired, these cards are left blank (see Table 15).

Table 15. Format for Footnotes

Card Types	Input	Card Columns	Format
25	FNOTES	1-80	8A10
26	FNOTES	1-40	4A10

Card types 25 and 26 are input in pairs allowing for five footnotes and 120 characters per footnote.

OUTPUT

One of the prime objectives of SAFSCAM is to display cost data in a logical, traceable, and useful format. The program produces eight output sections to accomplish this task as follows.

1. Secondary Output

    a. Input data file

    b. Reformatted listing of the input file

        (1) CBS
        (2) Equipment elements cost data
        (3) Ship installation schedule
        (4) Equipment elements per ship
        (5) CBS elements included in unit flyaway costs

    c. CER evaluation by equipment element

    d. Equipment quantities - fleet summary

2. Primary Cost Charts

    a. Equipment element LCC - fleet summary

    b. Unit ship costs by equipment element

    c. Ship class cost summary

    d. LCC by budget appropriations

Appendix C is a computer listing of a sample run illustrating the secondary output and the four primary cost output charts.

INPUT DATA FILE AND REFORMATTED LISTING

The first output of SAFSCAM is a listing of the input data file in card image form. This listing is used in checking and locating input errors. The reformatted input listing is next and may be used to check whether the program is decoding the data properly. Its main purpose, however, is to provide the input data in an organized and labeled manner so that it may be used as traceable backup for the cost items in final output charts. The ship installation schedule, equipment elements per ship chart, and the next two sections of the reformatted listing present a good summary of the elements of the system being costed. Both charts are in a format suitable for publication.

CER EVALUATION BY EQUIPMENT ELEMENT

The output in this section gives the user the immediate values of all calculations performed in the evaluation of the CERs. The left section of the page lists for each input the CBS element number or factor and the value of all parameters (P1...P6) that make up the CER (TEMP). A factor must be calculated prior to the evaluation of the CER in which it is used. The value of the factor is then shown as a parameter in its proper CER. The right section of the page displays the SUBELS array. If a particular CBS element is composed of several CERs, each CER is stored in SUBEL 1 through SUBEL 6. A throughout cost would be stored in SUBEL 7. The total cost is found in SUBEL 8 and is incremented each time a subelement is stored in the array. For a factor, no data is stored in SUBEL 1-8, but the value of the factor is found under the FACTOR column.

EQUIPMENT QUANTITIES--FLEET SUMMARY

Fleet operational and investment quantities for each equipment element are given in this section. The quantities are generated from the ship installation schedule and the equipment elements per ship. For each equipment element, the quantity per ship is multiplied by the number of ships in the class. This procedure is repeated for each ship class and then summed over all ship classes.

EQUIPMENT ELEMENT LCC--FLEET SUMMARY

LCCs are calculated for each equipment element using the fleet operational and investment quantities. These cost estimates from the SUBEL arrays are presented in Figure 7. It is the first of the four primary output charts. Up to 10 columns can be printed on a page. If there is only one column left to be printed on the next page, SAFSCAM will print nine columns of the one page and two on the next page. This rule also applies to the next two charts as shown in Figures 8 and 9.

SAFSAM
SAMPLE TESTCASE

09/08/79
19.15.26.

EQUIPMENT ELEMENT LIFE CYCLE COSTS
61 SHIP FLEET SUMMARY
P D T & E PHASE
(FY77 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	1 GUN	4 GUN	MISSILE	TOTAL
	1	PDT&E PHASE	57.34	0.00	0.00	1989.13	2046.47
	2	CONTRACTOR	49.60	0.00	0.00	1729.68	1779.28
[illegible]	3	SYSTEM/PROGRAM MGT	0.00	0.00	0.00	121.50	121.50
[illegible]	4	SYSTEMS ENGINEERING	17.73	0.00	0.00	184.14	201.87
[illegible]	5	TEST HARDWARE F&D	21.56	0.00	0.00	1380.96	1402.52
[illegible]	6	DEVELOPMENT T&E	4.98	0.00	0.00	0.00	4.98
[illegible]	7	INDUSTRIAL FACILITIES	0.00	0.00	0.00	0.00	0.00
[illegible]	8	DATA	0.00	0.00	0.00	33.07	33.07
[illegible]	9	SUPPORT EQUIPMENT	5.33	0.00	0.00	10.00	15.33
	10	GOVERNMENT	7.44	0.00	0.00	259.45	266.89
[illegible]	11	SYSTEM/PROGRAM MGT	0.00	0.00	0.00	18.23	18.23
[illegible]	12	SYSTEMS ENGINEERING	2.66	0.00	0.00	27.62	30.28
[illegible]	13	DEVELOPMENT T&E	1.98	0.00	0.00	207.14	211.13
[illegible]	14	DATA	.42	0.00	0.00	6.46	7.26
[illegible]	15	SUPPORT EQUIPMENT	.80	0.00	0.00	1.50	2.30

Figure 7. Equipment Element LCCs

SAFSAM
SAMPLE TESTCASE

09/08/79
19.15.26.

A SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 61 SHIP FLEET
P D T & E PHASE
(FY77 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	MISSILE	4 GUN	TOTAL
	1	PDT&E PHASE	.94	47.91	0.00	48.85
	2	CONTRACTOR	.81	41.66	0.00	42.48
[illegible]	3	SYSTEM/PROGRAM MGT	0.00	2.93	0.00	2.93
[illegible]	4	SYSTEMS ENGINEERING	.29	4.44	0.00	4.73
[illegible]	5	TEST HARDWARE F&D	.35	33.26	0.00	33.62
[illegible]	6	DEVELOPMENT T&E	.08	0.00	0.00	.08
[illegible]	7	INDUSTRIAL FACILITIES	0.00	0.00	0.00	0.00
[illegible]	8	DATA	0.00	.80	0.00	.80
[illegible]	9	SUPPORT EQUIPMENT	.09	.24	0.00	.33
	10	GOVERNMENT	.12	6.25	0.00	6.37
[illegible]	11	SYSTEM/PROGRAM MGT	0.00	.44	0.00	.44
[illegible]	12	SYSTEMS ENGINEERING	.04	.67	0.00	.71
[illegible]	13	DEVELOPMENT T&E	.07	4.99	0.00	5.05
[illegible]	14	DATA	.01	.16	0.00	.17
[illegible]	15	SUPPORT EQUIPMENT	.01	.04	0.00	.05

Figure 8. A Ship Class--Unit Ship Costs Equipment Element

UNIT SHIP COSTS BY EQUIPMENT ELEMENT

This set of charts (Figure 8) presents LCCs by equipment elements for one ship in a particular ship class. The cost for each equipment element is determined by multiplying the unit cost of equipment by the quantity of that equipment on one ship in the class. It is assumed that all ships in a class will have the same operational and investment quantities. There is an output chart for each ship class.

SHIP CLASS COST SUMMARY

This chart (Figure 9) gives the total cost over all equipment elements for each ship class and the fleet LCCs. LCC for each ship are calculated by multiplying the total column from the previous set of charts (Figure 8) by the number of ships in that class from the Ship Installation Schedule.

LCCs BY BUDGET APPROPRIATIONS

The budget appropriation chart (Figure 10) gives costs by ship class, equipment element, contractor versus government, and budget appropriations. LCCs from Figure 8 are separated according to those four criteria. For each ship class, the costs in each category are multiplied by the number of ships in the class.

SAFSCAM
SAMPLE TESTCASE

09/08/78
19.15.26.

SHIP CLASS COST SUMMARY
LIFE CYCLE COSTS - 61 SHIP FLEET
R D T & E PHASE
(FY77 $M)

APPRO	ROW	COST ELEMENT	A	B	C	D	E	TOTAL
	1	TOTAL PHASE	586.17	923.54	414.00	63.69	58.77	2046.17
	2	CONTRACTOR	509.71	803.08	360.00	55.38	51.10	1779.28
[illegible]/OM	3	SYSTEM/PROGRAM MGT	35.12	54.75	24.55	3.78	3.30	121.50
[illegible]TE	4	SYSTEMS ENGINEERING	58.71	91.41	40.98	6.30	6.46	201.87
[illegible]TE	5	TEST HARDWARE FAB	403.46	632.60	283.58	43.63	39.32	1402.52
[illegible]TE	6	DEVELOPMENT TSE	.98	2.47	1.06	.16	.41	4.98
[illegible]/MC	7	INDUSTRIAL FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00
[illegible]TE	8	DATA	9.56	14.90	6.68	1.03	.90	33.07
[illegible]TE	9	SUPPORT EQUIPMENT	3.34	7.24	3.16	.49	.71	15.33
	10	GOVERNMENT	76.46	120.46	54.00	8.31	7.67	266.89
[illegible]/OM	11	SYSTEM/PROGRAM MGT	5.27	8.21	3.68	.57	.50	18.23
[illegible]TE	12	SYSTEMS ENGINEERING	8.81	13.71	6.15	.95	.97	30.29
[illegible]TE	13	DEVELOPMENT TSE	60.66	95.24	42.70	6.57	5.96	211.13
[illegible]TE	14	DATA	2.02	3.29	1.48	.23	.24	7.26
[illegible]TE	15	SUPPORT EQUIPMENT	.69	1.35	.47	.07	.11	2.30

Figure 9. Ship Class Cost Summary

SAF CAM
SAMPLE TEST CASE

LIFE CYCLE COSTS BY BUDGET APPROPRIATION
BY EQUIPMENT ELEMENT WITHIN SHIP CLASS
61 SHIP FLEET
(FY77 $M)

09/08/78
19.15.26.

E	RDTE	PROC	MCN	MPN	OMN	SYS TOT
FIRST YEAR						
CONTRACTOR	4.060	33.952	0.000	0.000	0.000	38.018
GOVERNMENT	.673	2.552	0.000	0.000	8.536	11.763
TOTAL(C+G)	4.741	36.504	0.000	0.000	8.536	49.781
MISSILE						
CONTRACTOR	47.633	23.868	0.000	0.000	0.000	70.906
GOVERNMENT	7.097	4.821	0.000	0.000	1136.450	1148.367
TOTAL(C+G)	54.135	28.688	0.000	0.000	1136.450	1219.274
LOGS						
CONTRACTOR	0.000	0.000	0.000	0.000	0.000	0.000
GOVERNMENT	0.000	.159	0.000	0.000	5.843	6.002
TOTAL(C+G)	0.000	.159	0.000	0.000	5.843	6.002
SHIP CLASS TOTAL						
CONTRACTOR	51.194	57.820	0.000	0.000	0.000	108.924
GOVERNMENT	7.772	7.531	0.000	0.000	1150.830	1166.133
TOTAL(C+G)	58.975	65.351	0.000	0.000	1150.830	1275.057
61 SHIP FLEET TOTAL						
CONTRACTOR	1779.279	1295.413	0.000	0.000	0.000	3074.692
GOVERNMENT	268.852	233.766	0.000	0.000	41964.754	42478.311
TOTAL(C+G)	2048.070	1529.180	0.000	0.000	41964.754	45551.004

Figure 10. LCCs by Budget Appropriation

APPENDIX A

DESCRIPTION AND LISTING OF SAFSCAM SUBROUTINES

This appendix is a brief description and listing of the subroutines and functions that make up SAFSCAM. Figure A-1 shows the relationship of the routines.

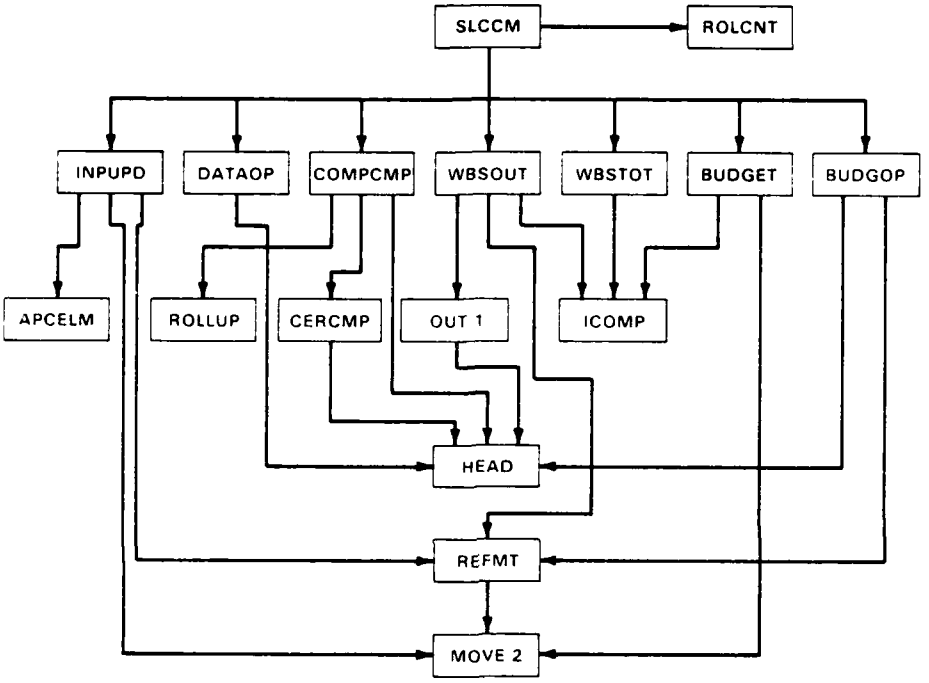


Figure A-1. Relationship of Routines

SLCCM is the main program that directs and controls all the operations. It calls all the primary subroutines as indicated in Figure A-1.

INPUPD reads and lists the input stream. It also sets up and initializes mass storage files for later use. The input is temporarily stored on a mass storage file.

DATAOP proofprints and reformats the input stream and stores it back on mass storage files. DATAOP also prints the reformatted backup cost data.

COMPCMP computes the LCC per equipment independent of ship class for all units of any class and stores the data on mass storage files.

CERCOMP decodes the proper CER forms and computes the CBS element cost and stores them in the row array.

WBSOUT sets up the cost data and formats for printing in OUT1.

WBSTOT computes the equipment element cost totals for each ship. This routine is only called when the unit ship costs by equipment element chart is not used, but the equipment element cost totals are needed for other charts.

ROLCNT is called when ROLLUP control is selected and new line counts are needed for printing.

BUDGET divides the costs for each equipment on each ship class into budget appropriation codes and government or contractor costs.

BUDGOP sets up the budget cost data for printing.

APCELM sets up the IWORD array for printing. The IWORD array contains the appropriation code, CBS number, and the cost element names.

ROLLUP executes the ROLLUP procedure for automatically summing the CBS row entries.

OUT1 directs the output printing for the first three primary cost charts.

MOVE 2 is a machine language (COMPASS) routine that is used to move characters of input words into two specific locations of another word. It is used in decoding and testing input words.

HEAD is used to print the title and data on each page of output.

REFMT is used to reformat and shift data.

ICOMP is a function used to determine the position of a given equipment element in an array of ships and equipments.

```
      PROGRAM SLCCM (INPUT=192,OUTPUT=960,TAPE5=INPUT,TAPE6=OUTPUT,
     C              TAPE2=256,TAPE3=256, TAPE4=256,  TAPE7=1408,
     C              TAPE8=384,TAPE9=256,TAPE10=256, TAPE11=1216)
C
C
C **** SAFSCAM = SYSTEM FORCE STRUCTURE COST ANALYSIS MODEL ****
C
C    SAFSCAM WAS WRITTEN IN 1975 BY CARL SINKBEIL, COMPUTER SCIENCE
C CORPORATION, HUNTSVILLE, AL.(205-837-7200) UNDER CONTRACT
C DAAH01-75-C-0007 FOR THE ARMY MISSILE COMMAND, REDSTONE ARSENAL
C AL, TO PROVIDE A LIFE CYCLE COST MODEL FOR THE ARMY SHORADS-
C ROLAND MISSILE SYSTEM.  THIS MODEL, KNOWN AS THE ROLAND SYSTEM
C LIFE CYCLE COST MODEL(SLCCM) WAS OPERATED ON A CDC 7600 UNDER
C SCOPE 2.1.
C
C    SLCCM WAS CHOSEN BY ALAN GLAZMAN, NSWC/DL (N-30) IN NOV, 1976
C FOR MODIFICATION AND EXECUTION ON A CDC 6700 UNDER SCOPE 3.4 TO DO
C SIMILAR MODELLING FOR THE NAVY SIRCS (SHIPBOARD INTERMEDIATE
C RANGE COMBAT SYSTEM).  AFTER MAJOR MODIFICATIONS UNDER THE
C SUPERVISION OF THE LATE DR. BARBARA BELL, SLCCM WAS CHANGED TO
C SAFSCAM.
C
C    MODEL CHANGES WERE  MADE BY THE FOLLOWING PERSONS:
C
C      CONNIE MUNDY    NSWC/DL(K-71) AV249-7463  NOV 76 - MAR 77
C      MIKE FAERINKIS  NSWC/DL(K-74) AV249-7852  APR 77 - JAN 78
C      CAROLYN NELSON  NSWC/DL(N-30) AV249-8575  FEB 78 - AUG 79
C
C
C ********************** NAMES COMMON **************************
C
C      NMSYS           - NAME OF THE SYSTEM
C      NOSUB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED
C      NMSUB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS
C      NOCOMP( )       - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)
C                        (RUNNING TOTAL FOR EQUIPMENTS)
C      NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES
C                        IN WBSOUT (INDEXED BY EQUIPMENT NUMBER
C                        AND SHIPCLASS NUMBER)
C      NAMESC( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)
C                        FOR EQUIPMENT QUANTITIES TABLE - FLEET
C                        SUMMARY
C      EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)
C      SHIPNM          - PRESENT SHIPCLASS (BEING PROCESSED)
C
C
      COMMON / NAMES   /  NMSYS, NOSUB, NMSUB(2,43), NOCOMP(43),
     1          NMCOMP(2,100,43),NAMESC(100,2),EQUI,SHIPNM
      INTEGER EQUI,SHIPNM
C ****************MISC (MISCELLANEOUS) COMMON ******************
C
C      NAP             - COUNT OF DIFFERENT APPROPRIATION CODES
C      APPRO( )        - APPROPRIATION CODE NAMES
C      SPCL( , )       - PERCENTAGES FOR CBS ELEMENT COST SPLITS
C      NPH             - COUNT OF THE LIFE CYCLE PHASES
C      IPH( )          - FIRST CBS ELEMENT NUMBER OF EACH PHASE
C      IPB( )          - CBS ELEMENT NUMBER FOR PAGE BREAKS
```

```
C                          (LAST CBS NUMBER FOR THE PAGE)
C       IPHASE( , )      - TITLES OF CBS PHASES
C       FLEETZ           - FLEET (SYSTEM) SIZE
C       NROLL( )         - LOWEST COST ELEMENT LEVEL TO BE PRINTED
C                          (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)
C       RDTOT            - TOTAL RDT&E COST
C       TOTINV           - TOTAL INVESTMENT COST MINUS TOTAL RIPOUT
C       TOTRIP           - TOTAL RIPOUT COST
C       SMISRD           - MISSILE RDT&E COST
C       NOFLY            - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN
C                          FLYAWAY COSTS
C       IFLYROW( )       - CBS ELEMENT NUMBER FOR FLYAWAY COSTS
C       NOYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE
C       IYEARS           - YEARS COVERED BY THE SHIP INSTALLATION TABLE
C       IYRS             - NUMBER OF YEARS IN SHIP INSTALLATION TABLE
C                          PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE)
C       FNOTES( , )      - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS
C
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),
     1          IPHASE(2,4),FLEETZ,NROLL(4),RDTOT,TOTINV,TOTRIP,
     2          SMISRD,NOFLY,IFLYROW(25),NOYRS,IYEARS(12),IYRS,
     3          FNOTES(5,12)
      INTEGER APPRO,SPCL,FLEETZ
C
C
C************************** NPUT COMMON ***************************
C
C VARIOUS OTHER ARRAYS ARE EQUIVALENCED TO THE "ARAY" ARRAY AS IN:
C
C  - SLCCM  : ROW    = ARAY(1,1)
C  - BUDGET : CG     = ARAY(1,2)
C  - INPUPC : IOREC  = ARAY(1,1)
C  - COMPCMP: ROW    = ARAY(1,1)
C  - APCELM : IRAY   = ARAY(1,1)
C
      COMMON / NPUT    /  ARAY(150,2)
C
C
C ************** MS (LENGTH AND COUNTER) COMMON ****************
C
C
C       LENR             - MASS STORAGE UNITS COMMON RECORD LENGTH
C                          (TYPICALLY 150)
C       NWBS             - NUMBER OF ELEMENTS IN THE CBS (MAX 150)
C       ICCTR            - NUMBER OF EQUIPMENTS IN THE EQUIPMENT
C                          ELEMENTS TABLE
C       L150             - (150 WORDS) RECORD LENGTH OF 7 ARRAYS
C                          IN THE "CERVLS" COMMON
C       L900             - (900 WORDS) RECORD LENGTH OF 2 ARRAYS
C                          IN THE "CERVLS" COMMON
C
      COMMON / MS2 / LENR,NWBS,ICCTR,L150,L190
C
C
C
C ********** CSTAB (EQUIPMENT QUANTITIES) COMMON ****************
C
```

```
C       QCMPT          - QUANTITY OF EQUIPMENT ALREADY DEPLOYED          CSTAB      4
C                        (O & S ) OVER ALL SHIPCLASSES (Q1) (INTEGER)    CSTAB      5
C       QCMPT2         - QUANTITY OF EQUIPMENT TO BE MANUFACTURER        CSTAB      6
C                        INSTALLED (INVESTMENT) OVER ALL SHIPCLASSES     CSTAB      7
C                        (Q2) (REAL)                                     CSTAB      8
C       CSTABLE        - SINGLY-DIMENSIONED ARRAY WHOSE MEMBERS ARE      CSTAB      9
C                        A SERIES OF:                                    CSTAB     10
C                              --SHIPCLASS NAME                          CSTAB     11
C                              --O & S QUANTITY OF EQUIPMENT FOR EACH    CSTAB     12
C                                SHIP ON A PARTICULAR SHIPCLASS          CSTAB     13
C                              --INV QUANTITY OF EQUIPMENT FOR EACH      CSTAB     14
C                                SHIP ON A PARTICULAR SHIPCLASS          CSTAB     15
C                        (THESE THREE MEMBERS ARE GIVEN FOR EACH         CSTAB     16
C                         SHIP CLASS MAKING A SERIES OF DATA TRIPLETS)   CSTAB     17
C                        (VALUES ARE INTEGER)                            CSTAB     18
C       CSTABEL        - SINGLY-DIMENSIONED ARRAY OF THE INVESTMENT      CSTAB     19
C                        QUANTITY OF EQUIPMENT FOR EACH SHIP ON A        CSTAB     20
C                        PARTICULAR SHIPCLASS. DATA ELEMENTS MUST        CSTAB     21
C                        BE STORED IN THE SAME SHIPCLASS ORDER AS        CSTAB     22
C                        CSTABLE.  THE TWO ARRAYS MAY BE THOUGHT         CSTAB     23
C                        OF AS A SERIES OF DATA QUADRUPLETS.             CSTAB     24
C                                                                        CSTAB     25
C                                                                        CSTAB     26
      COMMON /CSTAB/QCMPT(100),QCMPT2(100),CSTABLE(3750),CSTABEL(1250)   CSTAB     27
      INTEGER QCMPT,CSTABLE                                              CSTAB     28
C                                                                        SHIPINS    2
C *********** MARRAY (IREC ARRAY) COMMON ******************             SHIPINS    3
C                                                                        SHIPINS    4
C                                                                        SHIPINS    5
C     THE IREC ARRAY IS A SINGLY-SUBSCRIPTED ARRAY WHOSE FIRST POSITION  SHIPINS    6
C IS THE TOTAL NUMBER OF UNIQUE SHIPCLASS/EQUIPMENT COMBINATIONS.        SHIPINS    7
C THE NEXT THREE POSITIONS START A SERIES OF TRIPLETS WHOSE              SHIPINS    8
C MEMBERS ARE: SHIPCLASS NAME, EQUIPMENT NAME, MS 3 INDEX.               SHIPINS    9
C       IREC(1)        - THE RUNNING SUM OF THE TOTAL NUMBER OF UNIQUE   SHIPINS   10
C                        SHIPCLASS/EQUIPMENT COMBINATION IN THE          SHIPINS   11
C                        EQUIPMENT LEVEL INPUT                           SHIPINS   12
C       IREC(2,5,8,    - THE NAME OF THE SHIP CLASS                      SHIPINS   13
C            11,ETC)                                                     SHIPINS   14
C       IREC(3,6,9     - THE NAME OF THE EQUIPMENT                       SHIPINS   15
C            12,ETC)                                                     SHIPINS   16
C       IREC(4,7,10    - INDEX FOR MASS STORAGE UNIT 3.  AN INTEGER      SHIPINS   17
C            13,ETC)     NUMBER BEGINNING A 18 AND INCREMENTING BY       SHIPINS   18
C                        2 TO FORM 18,20,22,24,ETC.  THIS INDEX IS       SHIPINS   19
C                        THE STARTING LOCATION OF A RECORD (LENGTH)      SHIPINS   20
C                        "NWBS WORDS") ON MASS STORAGE 3 WHICH           SHIPINS   21
C                        CONTAINS THE UNIT COSTS OF THE EQUIPMENTS       SHIPINS   22
C                        ON A UNIT SHIP (COMPUTED BY SUBROUTINE          SHIPINS   23
C                        COMPCMP).                                       SHIPINS   24
C                                                                        SHIPINS   25
      COMMON / MARRAY / IREC(3750)                                       SHIPINS   26
C                                                                        SHIPINS   27
C **** SHIPINS (SHIP SUMMATION AND INSTALLATION TABLE) COMMON *****      SHIPINS   28
C                                                                        SHIPINS   29
C       SHIPSUM( )     - CONTAINS THE TOTAL NUMBER OF UNIT SHIPS FOR     SHIPINS   30
C                        EACH SHIP CLASS FOUND BY INSPECTION OF          SHIPINS   31
C                        THE SHIP INSTALLATION TABLE                     SHIPINS   32
C       SINSTE( , )    - THE SHIP DEPLOYMENT/INSTALLATION SCHEDULE       SHIPINS   33
```

```
C                          TABLE. FOR EACH SHIP CLASS:                    SHIPINS   34
C                             SINSTB(X,1)   - SHIP CLASS NAME             SHIPINS   35
C                             SINSTB(X,2-7) - THE YEARLY NUMBERS OF       SHIPINS   36
C                                   UNIT SHIPS OF THIS CLASS TO BE        SHIPINS   37
C                                   DEPLOYED/INSTALLED                    SHIPINS   38
C      SHIPSM( )        - THE TOTAL NUMBER OF UNIT SHIPS FOR EACH         SHIPINS   39
C                         SHIP CLASS.  IT IS THE SAME COUNT AS            SHIPINS   40
C                         SHIPSUM, HOWEVER, IT IS DEFINED IN A            SHIPINS   41
C                         SPECIFIC ORDER AFTER ERROR-CHECKING IN          SHIPINS   42
C                         SLCCM'S NESTED DO-LOOPS WHICH                   SHIPINS   43
C                         DETERMINE THE TOTAL COSTS BY SHIP CLASS         SHIPINS   44
C                                                                         SHIPINS   45
      COMMON / SHIPINS / SHIPSUM(43), SINSTB(43,7), SHIPSM(43)            SHIPINS   46
      INTEGER SHIPSUM, SINSTB, SHIPSM                                     SHIPINS   47
C                                                                         CERVLS     2
C                                                                         CERVLS     3
C ***** CERVLS (COST ESTIMATING RELATIONSHIP (CER) VALUES) COMMON ****** CERVLS     4
C                                                                         CERVLS     5
C     THE CERVLS COMMON CONTAINS LOCATIONS FOR STORAGE OF THE CER         CERVLS     6
C INPUT CARD COUNT, THE ROW ID'S, THE CER EQUATION NUMBERS, THE           CERVLS     7
C ROW CROSS REFERENCE NUMBERS, THE INPUT PARAMETERS, THE ADDITION         CERVLS     8
C OR CERS CONTROL, STORAGE ARRAY FOR EQUIPMENT NAME, CER INDEX,           CERVLS     9
C AND TPUT/NPUT INDEXES FOR ALL EQUIPMENT INPUT.                          CERVLS    10
C                                                                         CERVLS    11
C      CERCT            - NUMBER OF CER'S FOR THIS PARTICULAR EQUIPMENT   CERVLS    12
C                         (1 WORD)                                        CERVLS    13
C      IFORC( )         - (F OR C) ALPHABETIC CHARACTER INDICATING        CERVLS    14
C                         'FACTOR' OR 'CER'.   (150 WORDS)                CERVLS    15
C      IROWID           - CBS ELEMENT NUMBER TO WHICH THIS CER APPLIES    CERVLS    16
C                         (150 WORDS)                                     CERVLS    17
C      IADD             - CER CONTROL FLAGS (0 THRU 6) FOR ADDITIVE       CERVLS    18
C                         CERS OR SUBELEMENTS. 0 INDICATES NO ADDING.     CERVLS    19
C                         1 THRU 6 INDICATE ADD UP SUBELEMENTS.           CERVLS    20
C                         (150 WORDS)                                     CERVLS    21
C      ICERNO           - REFERENCE NUMBER FOR CER EQUATIONS IN THE       CERVLS    22
C                         'CERCOMP' SUBROUTINE.  (150 WORDS)              CERVLS    23
C      IXREFNO          - CBS ELEMENT NUMBER USED IN CROSS REFERENCING    CERVLS    24
C                         A PREVIOUSLY COMPUTED CBS ELEMENT.  AT PRESENT  CERVLS    25
C                         ONLY CER EQUATION NUMBER 8 ALLOWS CROSS         CERVLS    26
C                         REFERENCING.   0 INDICATES NO CROSS-REF.        CERVLS    27
C                         (150 WORDS)                                     CERVLS    28
C      IXREFAD          - CER CONTROL FLAGS FOR CROSS-REFERENCING         CERVLS    29
C                         CER SUB-ELEMENTS. (150 WORDS)                   CERVLS    30
C      IFSTORE          - STORES 'FACTOR' PARAMETERS. (900 WORDS)         CERVLS    31
C      PSSTORE          - STORES NUMBERICAL PARAMETERS. (900 WORDS)       CERVLS    32
C      ICER( )          - A SINGLY-SUBSCRIPTED ARRAY CONTAINING A         CERVLS    33
C                         MAXIMUM OF 100 DATA TRIPLETS WHOSE MEMBERS      CERVLS    34
C                         ARE:                                            CERVLS    35
C        ICER(1,4,7,    - EQUIPMENT NAME                                  CERVLS    36
C             ETC)                                                        CERVLS    37
C        ICER(2,4,8     - INDEX FOR MASS STORAGE UNIT 8.  INDEX           CERVLS    38
C             ETC)        BEGINS AT 1 AND INCREMENTS BY 9 (1,10,19,       CERVLS    39
C                         ETC). THE FOLLOWING DATA RECORDS ARE            CERVLS    40
C                         INDEXED:                                        CERVLS    41
C                            1   CERCT       6   IXREFNO                  CERVLS    42
C                            2   IFORC       7   IXREFAD                  CERVLS    43
C                            3   IROWID      8   IFSTORE                  CERVLS    44
```

```
C                          4   IADD        9   PSSTORE
C                          5   ICERNO
C        ICER(3,6,9    - INDEX FOR MASS STORAGE UNIT 2 AND 3.
C                        INDEX BEGINS AT 18 AND INCREMENTS BY 2
C                        (18,20,22,ETC) AND IS IDENTICAL TO THE
C                        THIRD MEMBER OF DATA TRIPLET STORED IN
C                        THE IREC ARRAY.
C      SUBELS( , )     - SUBELS IS A CROSS-HATCHED ARRAY WHICH IS
C                        RELATED ONE-TO-ONE TO THE CBS.
C                        IT IS USED LOCALLY WITHIN 'COMPCMP' AND
C                        'CERCOMP' FOR INTERIM STORAGE OF UP TO
C                        SIX SUBELEMENTS, 1 THRUPUT, AND 1 TOTAL
C                        VALUE   FOR EACH CBS ELEMENT.
C      FACTOR( )       - A FACTOR IS A PRECURSOR OF ONE OR MORE
C                        CERS.
C
C
      COMMON /CERVLS/ CERCT, IFORC(150), IROWID(150), IADD(150),
     C                ICERNO(150), IXREFNO(150),IXREFAD(150),
     2                 IFSTORE(6,150),PSSTORE(6,150),ICER(300),
     C                SUBELS(8,150), FACTORS(150)
      INTEGER CERCT
C
C ******************** ROLUPCT COMMON ************************
C
C
C ********************CHARTS (CONTROL) COMMON ********************
C
C
C      CHRTCNT CONTAINS THE MAJOR OUTPUT CHART CONTROLS
C                 0    - GENERATE CHART
C                 1    - NO GENERATION OF CHART
C
C      CHRTCNT(1)      - IF EQUAL TO 0 - CALLS WBSOUT(1) FOR EQUIPMENT
C                        ELEMENT LIFE CYCLE COSTS - FLEET SUMMARY
C      CHRTCNT(2)      - IF EQUAL TO 0 - CALLS WBSOUT(2) FOR UNIT
C                        SHIP COSTS BY EQUIPMENT ELEMENT
C                      - IF NE. TO 0   - CALLS WBSTOT BECAUSE
C                        WBSOUT(2) WAS NOT CALLED
C      CHRTCNT(3)      - IF EQUAL TO 0 - CALLS WBSOUT(3) FOR SHIP
C                        CLASS SUMMARY
C      CHRTCNT(4)      - IF EQUAL TO 0 - CALLS BLDGOP FOR LIFE
C                        CYCLE COSTS BY BUDGET APPROPRIATIONS
C      CHRTCNT(5)      - IF NE. TO 0   - CALLS RCLCNT FOR OUTPUT BY
C                        ROLL-UP NUMBER
C      CHRTCNT(6)      - IF EQUAL TO 0 - LISTS THE SUBELS ARRAY
C                        FOR ENTIRE CBS FOR PROOFING
C
C
      COMMON / CHARTS  /  CHRTCNT(15)
      INTEGER CHRTCNT
C
C ROW ARRAY IS EQUIVALENCED TO THE "ARAY" ARRAY AND USED AS A COLUMN TO
C  - READ EBS COMPONENT UNIT COSTS FROM MASS STORAGE UNIT 3,
C  - COMPUTE TOTAL FLEET EBS UNIT COSTS AND WRITE THEM ON MS UNIT 10.
C
      DIMENSION ROW(1)
```

```
C
      EQUIVALENCE ( ROW, ARAY(1,1) )
C
C   INITIALIZE 'HEAD' SUBROUTINE.
C   'HEAD' SUBROUTINE CAUSES A NEW PAGE AND PUTS TITLE AND SYSTEM
C   NAME AT TOP OF THE NEW PAGE.
C ***********************************************************
C
      CALL HEAD1
C
C ***********************************************************
C     CALL "INPUPD" SUBROUTINE TO:
C     - DEFINE CONTANTS
C     - INITIALIZE INDEX, LENGTH AND COUNTER VARIABLES
C     - SET-UP AND INITIALIZE RECORD SPACES ON MASS STORAGE UNITS
C       2, 3, 4, 9, AND 10
C     - READ IN THE ENTIRE INPUT FILE AND STOPE IT PIECE-MEAL ON
C       THE APPROPRIATE MS UNIT.  INPUT STREAM CONSISTS OF:
C
C                    - SHIP LEVEL INPUT
C                          - COST BREAKDOWN STRUCTURE (CBS)
C                          - BUDGET APPROPRIATION CODE BY CBS NO.
C                          - UNIT FLYAWAY DATA
C                          - SHIP INSTALLATION SCHEDULE
C                    - EQUIPMENT LEVEL INPUT
C                          - EQUIPMENT PER SHIP CLASS
C                          - EQUIPMENT COST DATA
C                                - THROUGHPUT COST
C                                - CER DATA
C
C ***********************************************************
C
      CALL INPUPD
C
C ***********************************************************
C  INITIALIZE TOTAL RDT&E AGGREGATE COST, TOTAL INVESTMENT
C  AGGREGATE COSTS AND TOTAL AGGREGATE RIP-OUT COSTS  FOR
C  DETERMINING WBS  FOR 1 PRIME AD 1 NAVY.
      RDTOT  = 0.
      TOTINV = 0.
      TOTRIP = 0.
      SMISRD = 0.
C
C              COMPUTE THE SHIP CLASS SUMS OVER ALL INPUT YEARS
C (COUNT THE NUMBERS OF UNIT SHIPS FOR EACH SHIP CLASS-SUBSYSTEM
C  FOR EACH YEAR IN THE SHIP INSTALLATION TABLE)
C
      DO 10 I=1,NOSUB
      SHIPSUM(I) = 0
      DO 10 I1=2,7
      SHIPSUM(I) = SHIPSUM(I) + SINSTB(I,I1)
   10 CONTINUE
C
C     COMPUTE THE FLEET SIZE
C
      FLEETZ = 0
      DO 11 II=1,NOSUB
```

```
                FLEETZ = FLEETZ + SHIPSUM(II)                                   SLCOM   102
             11 CONTINUE                                                        SLCOM   103
345          C                                                                  SLCOM   104
             C CALL "DATAOP" TO PROOF-PRINT THE INPUT DATA STREAM               SLCOM   105
             C READ AND STORE ON MASS STORAGE UNITS BY "INPUPO".                SLCOM   106
             C                                                                  SLCOM   107
             C ******************************************************************SLCOM   108
350              CALL DATAOP                                                    SLCOM   109
             C                                                                  SLCOM   110
             C ******************************************************************SLCOM   111
             C                COMPUTE WBS AND EBS                               SLCOM   112
             C                                                                  SLCOM   113
355              NCER = 1                                                       SLCOM   114
                 NCT = IREC(1) * 3                                              SLCOM   115
             C                                                                  SLCOM   116
             C DO-LOOP 45 = MASTER LOOP TO COMPUTE UNIT COSTS                   SLCOM   117
             C          FOR EACH EQUIPMENT ACROSS COST BREAKDOWN STRUCTURE      SLCOM   118
361          C                                                                  SLCOM   119
                 DO 45 I1=1,ICOTK                                               SLCOM   120
                 I9 = I1                                                        SLCOM   121
                 EQUI = ICER(NCER)                                              SLCOM   122
                 QCMPT(I1) = 0                                                  SLCOM   123
365              QCMPT2(I1) = 0.                                                SLCOM   124
             C                                                                  SLCOM   125
             C SUM QUANTITIES OF EQUIPMENT OVER ALL SHIP CLASSES                SLCOM   126
             C                                                                  SLCOM   127
                 DO 40 I=1,NCT,3                                                SLCOM   128
370              IBY3 = (I+2) / 3                                               SLCOM   129
                 IF(CSTABLE(I+1),NE,EQUI) GO TO 40                              SLCOM   130
             C                                                                  SLCOM   131
             C FOR EACH "COMP" FOUND IN "CSTABLE", MAKE CERTAIN THE SAME "COMP" SLCOM   132
             C FOR EACH "EQUIP" FOUND IN THE "CSTABLE", MAKE CERTAIN THE SAME "EQUIP" SLCOM 133
375          C IS DEPLOYED ON A SHIP CLASS IN THE "SINSTB"                      SLCOM   134
             C                                                                  SLCOM   135
                 DO 20 I3=1,NOSUB                                               SLCOM   136
                 IF ( CSTABLE(I) .EQ. SINSTB(I3,1) ) GO TO 30                   SLCOM   137
             20 CONTINUE                                                        SLCOM   138
380          C                                                                  SLCOM   139
             C ERROR MESSAGE - SHIP CLASS/"EQUIP" COMBO FROM "CSTABLE"          SLCOM   140
             C                 FAILED PROOF TEST IN "SINSTB"                    SLCOM   141
             C                                                                  SLCOM   142
                 WRITE (6,21) CSTABLE(I)                                        SLCOM   143
385              STOP "CSTABLE & SINSTB SHIP CLASS NAMES DO NOT COMPARE"        SLCOM   144
             21 FORMAT ( 1HJ, *SHIP *, A6, * IS NOT IN THE SHIP INSTALLATION*   SLCOM   145
               1 * SCHEDULE* )                                                  SLCOM   146
             C                                                                  SLCOM   147
             C SUM EQUIPMENT 'DEPLOYMENT' (O & S) QUANTITIES INTO THE "COMPT"   SLCOM   148
390          C ARRAY (QQUAN & Q)                                                SLCOM   149
             C SUM EQUIPMENT 'MANUFACTURE/INSTALL' (INVESTMENT) QUANTITES INTO  SLCOM   150
             C THE "QCMPT2" ARRAY (QQUAN2 & Q2)                                 SLCOM   151
             C                                                                  SLCOM   152
             30 CONTINUE                                                        SLCOM   153
395              QCMPT(I1) = QCMPT(I1) + SHIPSUM(I3) * CSTABLE(I+2)             SLCOM   154
                 QCMPT2(I1) = QCMPT2(I1) + SHIPSUM(I3) * CSTABEL(IBY3)          SLCOM   155
             40 CONTINUE                                                        SLCOM   156
             C                                                                  SLCOM   157
             C CALL "COMPCMP" (AND "GETCPP") TO GET UNIT EQUIPMENT COSTS        SLCOM   158
```

```
C       FROM INPUTS AND NPUTS (FACTORS & COST ESTIMATING RELATIONSHIPS),    SLCCM   159
C       AND TO PERFORM TIME-PHASING AS NECESSARY.                           SLCCM   160
C                                                                           SLCCM   161
C ***********************************************************             SLCCM   162
C                                                                           SLCCM   163
      CALL CCMPCMP (I9,ICER(NCER+2),ICER(NCER+1),CCMPT(I1),CCMPT2(I1))      SLCCM   164
C                                                                           SLCCM   165
C ***********************************************************             SLCCM   166
      NCER = NCER + 3                                                       SLCCM   167
   45 CONTINUE                                                              SLCCM   168
C                                                                           SLCCM   169
C SECOND CALL OF "DATAOP" SUBRTN PRINTS FOR EACH SHIP CLASS,                SLCCM   170
C THE UNIT SHIP DEPLOYMENT AND MFG/INSTALL EQUIPMENT QUANTITIES             SLCCM   171
C                                                                           SLCCM   172
C ***********************************************************             SLCCM   173
C                                                                           SLCCM   174
      CALL DATOP1                                                           SLCCM   175
C                                                                           SLCCM   176
C ***********************************************************             SLCCM   177
C                                                                           SLCCM   178
C             ORDER THE SHIP SUMMATIONS IN PROPER ORDER FOR PRINT           SLCCM   179
C          USAGE AND SETUP STORAGE OF THE TOTAL NUMBER OF COMPONENTS        SLCCM   180
C          PER SHIP CLASS.  THIS LAST OUTPUT IS STORED ON UNIT 10 TO BE     SLCCM   181
C          USED BY THE BUDGET ROUTINE.                                      SLCCM   182
C                                                                           SLCCM   183
      NWDSP1 = NWDS + 1                                                     SLCCM   184
      IPH2   = IPH(2)                                                       SLCCM   185
      IPHL   = IPH(NPH)                                                     SLCCM   186
      INC = 2                                                               SLCCM   187
      K = 3                                                                 SLCCM   188
      KBY3 = K/3                                                            SLCCM   189
C                                                                           SLCCM   190
C MAJOR DO-LOOP 49 TO READ EQUIPMENT UNIT COSTS FROM MS 3 INTO "ROW"        SLCCM   191
C MULTIPLY UNIT COSTS BY APPROPRIATE QUANTITY (Q OR Q2), AND                SLCCM   192
C PLACE RESULTS BACK IN "ROW" ARRAY & WRITE RESULTS ON MS UNIT 10.          SLCCM   193
C                                                                           SLCCM   194
C THIS DO-LOOP COMPUTES FOR EACH SHIP CLASS THE SUMMARY COST                SLCCM   195
C OF EACH EQUIPMENT VS. CBS ELEMENTS                                        SLCCM   196
C                                                                           SLCCM   197
      DO 49 ISUBS=1,NOSUB                                                   SLCCM   198
C                                                                           SLCCM   199
C             SETUP UNIT10 STORAGE INDEX                                    SLCCM   200
C                                                                           SLCCM   201
      INDX10 = ICOMP(ISUBS)                                                 SLCCM   202
C                                                                           SLCCM   203
C SET UP BEGINNING AND ENDING INDICES FOR CBS DATA READ FROM MS 3           SLCCM   204
C                                                                           SLCCM   205
      IBEG = INDX10*3 + 1                                                   SLCCM   206
      IEND = IBEG + (NOCOMP(ISUBS) - 1) * 3                                 SLCCM   207
C                                                                           SLCCM   208
C     ORDER SHIP SUMMATIONS AND ERROR CHECK! LOOK FOR FIRST APPEARANCE      SLCCM   209
C OF SHIP CLASS NAME IN "SINSTB"; IF FOUND, CONTINUE; IF NOT FOUND          SLCCM   210
C ABORT!                                                                    SLCCM   211
C     FOR ALL TRIPLETS (SHIP CLASS/EQUIPMENT/MS3 INDEX) STORED IN THE       SLCCM   212
C "IREC" ARRAY, THE SHIP CLASS NAME WILL BE CONSTANT FOR ALL TRIPLETS        SLCCM   213
C OF THIS "ISUB" SHIP CLASS BETWEEN "IBEG - 2" AND "IEND"                   SLCCM   214
C                                                                           SLCCM   215
```

```
      SHIPNM = IREC(IBEG-2)
      DO 46 I1=1,NOSUB
      IONE = I1
      IF ( SHIPNM .EQ. SINSTB(I1,1) ) GO TO 47
   46 CONTINUE
      WRITE (6,465) ISUBS,SHIPNM,NOSUB,IONE
  465 FORMAT (*1FOR SHIP CLASS*,I3,* - *,A7,* SEARCHING*,I3,
     C        * SUBSYSTEMS IN "SINSTB" ARRAY, "SLCCM" STOPPED *,
     C        *WITH SEARCH-LOOP INDEX*,I3,* BUT NO MATCH!*)
      STOP "IN SLCCM: DO-LOOP 46: SHIP NAME NOT FOUND IN SINSTB ARRAY"
   47 CONTINUE
      SHIPSM(ISUBS) = SHIPSUM(IONE)
C
C MULTIPLY UNIT COSTS OF THE SHIP'S EQUIPMENT BY THE SHIP EQUIP-
C MENT TABLE VALUES AND STORE ON MASS STORAGE UNIT 10
C
C THE VARIOUS "IF" TESTS BETWEEN HERE AND "49" ASSURE PROPER MULTIPLIERS
C AND SUMMATIONS ACCORDING TO THE NUMBER OF PHASE BREAKS IN THE "CBS":
C     - EG) 1 PHASE  = SIMPLE CBS
C     - EG) 2 PHASES = ASMD (RDT&E, INVESTMENT)
C     - EG) 3 PHASES = SIRCS (RDT&E, INVESTMENT, O&S)
C IN ANY EVENT, THE "TO BE MANUFACTURED" QUANTITY IS USED FOR "RDT&E"
C AND "INVESTMENT" PHASES; THE "DEPLOYED" QUANTITY IS USED FOR "O&S".
C
      DO 48 J=IBEG,IEND,INC
      CALL READMS ( 3, ROW, NWBS, IREC(J) )
      Q = CSTABLE(K)
      Q2 = CSTABLE(KBY3)
      K = K + 3
      KBY3 = K/3
      DO 475 I=1,NWBSM1
      IF (NPH.EQ.2) GO TO 474
      IF (I.LT.IPHL) GO TO 474
      ROW(I) = ROW(I) * Q
      GO TO 475
  474 ROW(I) = ROW(I) * Q2
  475 CONTINUE
      ROW(NWBS) = ROW(1) + ROW(IPH2) + ROW(IPHL)
      IF (IPH2.EQ.IPHL) ROW(NWBS) = ROW(NWBS) - ROW(IPHL)
      CALL WRITMS ( 10, ROW, NWBS, INDX10 )
      INDX10 = INDX10 + 1
   48 CONTINUE
   49 CONTINUE
C
C PRINT A CHART OF TOTAL EQUIPMENT COSTS VS. CBS ELEMENTS
C  ACCORDING TO CHRTCNT(1) INDICATOR (0=PRINT CHART)
C
      IF(CHRTCNT(1).NE.0) GO TO 50
C
C CHRTCNT(1) AND WBSOUT(1) CONTROL THE PRINTING AND
C COMPUTATIONS FOR THE FIRST MAJOR OUTPUT CHART -
C LIFE CYCLE COSTS - FLEET SUMMARY
C ************************************************************
C
      CALL WBSOUT(1)
C
C ************************************************************
```

```
   50 CONTINUE
C
C                COMPUTE BUDGETARY CODE COSTS
C
      DO 55 I=1,NOSUB
      NCOMP = NCCOMP(I)
      DO 55 J=1,NCOMP
C ***********************************************************
C
      CALL BUDGET ( I, J )
C
C ***********************************************************
   55 CONTINUE
C
C              CHECK CHRTCNT(5) TO SEE IF OUTPUT BY ROLL-UP NUMBER
C           IS REQUESTED.  IF YES THEN CALL RCLCNT TO GET THE COST
C           ELEMENT COUNT AND VALUES FOR OUTPUT
C                0 - FULL OUTPUT(NO),  1 - SELECTED OUTPUT(YES)
C ***********************************************************
C
      IF(CHRTCNT(5).NE.0) CALL RCLCNT
C
C ***********************************************************
C CHECK CHRTCNT(2) TO SEE IF UNIT SHIP COST BY EQUIPMENT
C IS REQUIRED. (SECOND MAJOR OUTPUT CHART)
C        0 - YES, 1 - NO
C
      IF(CHRTCNT(2).EQ.0) GO TO 70
C
C IF CHRTCNT(2).NE.0, WBSOUT(2) IS NOT CALLED; HOWEVER,
C UNIT SHIP CALCULATIONS ARE NEEDED THUS WBSTOT IS CALLED
C TO PREFORM THE NECESSARY COMPUTATIONS.
C ***********************************************************
      CALL WBSTOT
C
C ***********************************************************
      GO TO 75
C*
C CHRTCNT(2) AND WBSOUT(2) CONTROL THE PRINTING AND
C COMPUTATIONS FOR THE SECOND MAJOR OUTPUT CHART -
C UNIT SHIP COST BY EQUIPMENT
C
   70 CONTINUE
C ***********************************************************
C
      CALL WBSOUT(2)
C
C ***********************************************************
C
   75 CONTINUE
C
C  TEST CHRTCNT(3) TO SEE IF SHIP SUMMARY CHARTS ARE TO
C           BE GENERATED
C        0 - YES, 1 - NO
C
      IF(CHRTCNT(3).NE.0) GO TO 80
C
```

```
C CHRCNT(3) AND WBSOUT(3) CONTROL THE PRINTING AND
C COMPUTATIONS FOR THE THIRD MAJOR OUTPUT CHART -
C SHIP CLASS COST SUMMARY
C ***********************************************************
C
      CALL WBSOUT(3)
C
C ***********************************************************
C
   80 CONTINUE
C
C  TEST CHRTCNT(4) TO SEE IF BUDGETARY CODE COST CHART IS
C          TO BE GENERATED
C        0 - YES, 1 - NO
C
      IF(CHRTCNT(4).NE.0) GO TO 60
C ***********************************************************
C
      CALL BUDGOP
C
C ***********************************************************
   60 CONTINUE
      END
```

```
      SUBROUTINE BUDGET ( IS, IC )                                          BUDGET     2
C                                                                           SYST       2
C ********************** NAMES COMMON **************************           SYST       3
C                                                                           SYST       4
C     NMSYS           - NAME OF THE SYSTEM                                  SYST       5
C     NOSUB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED              SYST       6
C     NMSUB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS                  SYST       7
C     NOCOMP( )       - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)            SYST       8
C                       (RUNNING TOTAL FOR EQUIPMENTS)                      SYST       9
C     NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES             SYST      10
C                       IN WBSOUT (INDEXED BY EQUIPMENT NUMBER              SYST      11
C                       AND SHIPCLASS NUMBER)                               SYST      12
C     NAMESC( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)           SYST      13
C                       FOR EQUIPMENT QUANTITIES TABLE - FLEET              SYST      14
C                       SUMMARY                                             SYST      15
C     EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)                 SYST      16
C     SHIPNM          - PRESENT SHIPCLASS (BEING PROCESSED)                 SYST      17
C                                                                           SYST      18
C                                                                           SYST      19
      COMMON / NAMES  /  NMSYS, NOSUB, NMSUB(2,43), NOCOMP(43),             SYST      20
     1          NMCOMP(2,100,43),NAMESC(100,2),EQUI,SHIPNM                  SYST      21
      INTEGER EQUI,SHIPNM                                                   SYST      22
C ****************MISC (MISCELLANEOUS) COMMON ********************         SYST      23
C                                                                           SYST      24
C     NAP             - COUNT OF DIFFERENT APPROPRIATION CODES              SYST      25
C     APPRO( )        - APPROPRIATION CODE NAMES                            SYST      26
C     SPCL( , )       - PERCENTAGES FOR CBS ELEMENT COST SPLITS             SYST      27
C     NPH             - COUNT OF THE LIFE CYCLE PHASES                      SYST      28
C     IPH( )          - FIRST CBS ELEMENT NUMBER OF EACH PHASE              SYST      29
C     IPB( )          - CBS ELEMENT NUMBER FOR PAGE BREAKS                  SYST      30
C                       (LAST CBS NUMBER FOR THE PAGE)                      SYST      31
C     IPHASE( , )     - TITLES OF CBS PHASES                                SYST      32
C     FLEETZ          - FLEET (SYSTEM) SIZE                                 SYST      33
C     NROLL( )        - LOWEST COST ELEMENT LEVEL TO BE PRINTED             SYST      34
C                       (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)         SYST      35
C     ROTOT           - TOTAL ROTABLE COST                                  SYST      36
C     TOTINV          - TOTAL INVESTMENT COST MINUS TOTAL RIFOUT            SYST      37
C     TOTRIF          - TOTAL RIFOUT COST                                   SYST      38
C     SMISRC          - MISSILE ROTABLE COST                                SYST      39
C     NOFLY           - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN            SYST      40
C                       FLYAWAY COSTS                                       SYST      41
C     IFLYFCH( )      - CBS ELEMENT NUMBER FOR FLYAWAY COSTS                SYST      42
C     NOYRS           - NUMBER OF YEARS IN SHIP INSTALLATION TABLE          SYST      43
C     IYEARS          - YEARS COVERED BY THE SHIP INSTALLATION TABLE        SYST      44
C     IYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE          SYST      45
C                       PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE)     SYST      46
C     FNOTES( , )     - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS         SYST      47
C                                                                           SYST      48
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),           SYST      49
     1          IPHASE(2,4),FLEETZ,NROLL(4),ROTOT,TOTINV,TOTRIF,           SYST      50
     2          SMISRC,NOFLY,IFLYFCH(25),NOYRS,IYEARS(12),IYRS,            SYST      51
     3          FNOTES(5,12)                                               SYST      52
      INTEGER APPRO,SPCL,FLEETZ                                             SYST      53
C                                                                           SYST      54
      COMMON / BUDG / TOTC(7,2), TOTS(4,2,7), LENR9, IPROCOD(125)           BUDG       2
C                                                                           BUDG       3
C                                                                           MS2        2
```

```
C ************** MS (LENGTH AND COUNTER) COMMON ****************
C
C
C      LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH
C                        (TYPICALLY 150)
C      NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)
C      ICCTR           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT
C                        ELEMENTS TABLE
C      L150            - (150 WORDS) RECORD LENGTH OF 7 ARRAYS
C                        IN THE "CERVLS" COMMON
C      L900            - (900 WORDS) RECORD LENGTH OF 2 ARRAYS
C                        IN THE "CERVLS" COMMON
C
      COMMON / MS2 / LENR,NWBS,ICCTR,L150,L190
C
C
C
C
C************************** NPUT COMMON ***************************
C
C VARIOUS OTHER ARRAYS ARE EQUIVALENCED TO THE "ARAY" ARRAY AS IN:
C
C  - SLCCM  : ROW   = ARAY(1,1)
C  - BUDGET : CG    = ARAY(1,2)
C  - INPUPC : IOREC = ARAY(1,1)
C  - COMPCMP: ROW   = ARAY(1,1)
C  - APCELM : IRAY  = ARAY(1,1)
C
      COMMON / NPUT    /  ARAY(150,2)
C
      DIMENSION APSAV(150,2), CG(1), COL(150)
C
      EQUIVALENCE (ARAY(1,2),CG)
C
      INTEGER CHAR,APSAV,CG,APINDX
      INTEGER FCALL
C
C        APINDX - INDEX ON FILE 3 FOR BEGINNING LOCATION FOR TEMPORARY
C                 STORAGE OF APSAV(1,1) - 1ST PART APPRO
C                            APSAV(1,2) - 2ND PART APPRO
C                            CG  1 = CONTRACTOR
C                                2 = GOVERNMENT
      DATA APINDX / 218 /
      DATA FCALL /0/
      IF (FCALL.EQ.1) GO TO 220
      FCALL = 1
      KK = 1
C*       READ AND STORE APPRO AND GOV/CONT
      DO 200 I=1,5
      CALL READMS (3,ARAY,LENR,I)
      NPR = LENR/5
      DO 200 J=1,NPR
      INDX = (I-1)*NPR+J
      IF (INDX.GT.NWBS) GO TO 210
      INDEX = J*5-4
      IFLAG = 1
      II = 1
```

```
  100 CHAR = 10H                                                        BUDGET   34
      EQUI = 10H                                                        BUDGET   35
      DO 110 K=II,10                                                    BUDGET   36
      CALL MOVE (ARAY(INDEX),K,CHAR,1,1)                                BUDGET   37
      IF (CHAR.EQ.1H/.OR.CHAR.EQ.1H ) GO TO 120                         BUDGET   38
  110 CONTINUE                                                          BUDGET   39
  120 IF (K.EQ.II) GO TO 145                                            BUDGET   40
      CALL MOVE (ARAY(INDEX),II,EQUI,1,K-II)                            BUDGET   41
      IF ( (K-II).GT.2) GO TO 130                                       BUDGET   42
      DO 125 L=1,NAP                                                    BUDGET   43
      CALL MOVE (APPRO(L),1,CHAR,1,K-II)                                BUDGET   44
      IF(CHAR.NE.EQUI) GO TO 126                                        BUDGET   45
      EQUI = APPRO(L)                                                   BUDGET   46
      GO TO 140                                                         BUDGET   47
  126 IF(EQUI.NE.2HPR) GO TO 125                                        BUDGET   48
      GO TO 141                                                         BUDGET   49
  125 CONTINUE                                                          BUDGET   50
      GO TO 145                                                         BUDGET   51
  130 CONTINUE                                                          BUDGET   52
      DO 135 L=1,NAP                                                    BUDGET   53
      IF (APPRO(L).EQ.EQUI) GO TO 140                                   BUDGET   54
      IF(EQUI.NE.4HPROC) GO TO 135                                      BUDGET   55
      GO TO 141                                                         BUDGET   56
  135 CONTINUE                                                          BUDGET   57
      GO TO 145                                                         BUDGET   58
  140 APSAV(INDX,IFLAG) = L                                             BUDGET   59
      GO TO 142                                                         BUDGET   60
  141 APSAV(INDX,IFLAG) = 2                                             BUDGET   61
  142 CONTINUE                                                          BUDGET   62
      IF (IFLAG.EQ.2) GO TO 150                                         BUDGET   63
      II = K+1                                                          BUDGET   64
      IFLAG = 2                                                         BUDGET   65
      GO TO 100                                                         BUDGET   66
  145 APSAV(INDX,IFLAG) = 0                                             BUDGET   67
C*        GET GOV/CONT INDICATOR                                        BUDGET   68
  150 CONTINUE                                                          BUDGET   69
      IFLAG = 1                                                         BUDGET   70
      K = 0                                                             BUDGET   71
      INDEX = INDEX + 1                                                 BUDGET   72
      DO 170 L=1,30                                                     BUDGET   73
      CALL MOVE (ARAY(INDEX),L,CHAR,1,1)                                BUDGET   74
      IF (CHAR.EQ.1H ) GO TO (170,180), IFLAG                           BUDGET   75
      K = K+1                                                           BUDGET   76
      IFLAG = 2                                                         BUDGET   77
      CALL MOVE (CHAR,1,EQUI,K,1)                                       BUDGET   78
      IF (K.EQ.10) GO TO 180                                            BUDGET   79
  170 CONTINUE                                                          BUDGET   80
  180 IF (EQUI.EQ.10HCONTRACTOR) KK = 1                                 BUDGET   81
      IF (EQUI.EQ.10HGOVERNMENT) KK = 2                                 BUDGET   82
      CG(INDX) = KK                                                     BUDGET   83
  200 CONTINUE                                                          BUDGET   84
  210 CONTINUE                                                          BUDGET   85
      CALL WRITMS ( 3, APSAV(1,1), NWBS, APINDX   )                     BUDGET   86
      CALL WRITMS ( 3, APSAV(1,2), NWBS, APINDX+1 )                     BUDGET   87
      CALL WRITMS ( 3, CG        , NWBS, APINDX+2 )                     BUDGET   88
      GO TO 240                                                         BUDGET   89
C*                                                                      BUDGET   90
```

```
  220 CONTINUE                                                          BUDGET   91
      CALL READMS ( 3, APSAV(1,1), NWBS, APINDX    )                    BUDGET   92
      CALL READMS ( 3, APSAV(1,2), NWBS, APINDX+1 )                     BUDGET   93
      CALL READMS ( 3, CG          , NWBS, APINDX+2 )                   BUDGET   94
  240 I = IC(MP(IS)+IC-1                                                BUDGET   95
C                                                                       BUDGET   96
C                 SINCE THERE SO MANY C/S COMBINATIONS, UNIT 9 WILL     BUDGET   97
C           STORE THE TOTC TOTALS USING AN INDEX GENERATED FROM         BUDGET   98
C           C/S COMBINATION                                             BUDGET   99
      CALL READMS ( 9, TOTC, LEN 9, I )                                 BUDGET  100
      DO 250 J=1,56                                                     BUDGET  101
  250 TOTS(J) = 0.0                                                     BUDGET  102
      CALL READMS ( 10, COL, NWBS, I )                                  BUDGET  103
      KK = 0                                                            BUDGET  104
      II = 1                                                            BUDGET  105
      DO 360 J=1,NWBS                                                   BUDGET  106
      IBK = 1                                                           BUDGET  107
      DO 340 JJ=1,NPH                                                   BUDGET  108
  340 IBK = (J-IPH(JJ))*IBK                                             BUDGET  109
      IF (IBK.EQ.0) KK = KK+1                                           BUDGET  110
      L = CG(J)                                                         BUDGET  111
      K = APSAV(J,1)                                                    BUDGET  112
      IF (K.EQ.0) GO TO 360                                             BUDGET  113
      IF(K.EQ.2) K = IPRCOD(I)                                          BUDGET  114
      COLJ = COL(J)                                                     BUDGET  115
      IF (J.EQ.SPCL(1,II) ) COLJ = COL(J)*SPCL(2,II)/100.               BUDGET  116
  350 TOTC(K,L) = TOTC(K,L) + COLJ                                      BUDGET  117
      TOTS(KK,L,K) = TOTS(KK,L,K) + COLJ                                BUDGET  118
      IF (J.NE.SPCL(1,II) ) GO TO 360                                   BUDGET  119
      K = APSAV(J,2)                                                    BUDGET  120
      IF(K.EQ.2) K = IPRCOD(I)                                          BUDGET  121
      COLJ = COL(J)*SPCL(3,II)/100.                                     BUDGET  122
      II = II + 1                                                       BUDGET  123
      GO TO 350                                                         BUDGET  124
  360 CONTINUE                                                          BUDGET  125
C                                                                       BUDGET  126
C                 STORE TOTC ARRAY FOR THIS C/S COMBINATION ON UNIT 9   BUDGET  127
      CALL WRITMS ( 9, TOTC, LEN9, I )                                  BUDGET  128
      RETURN                                                            BUDGET  129
      END                                                               BUDGET  130
```

```
SUBROUTINE BUDGOF     74/76   OPT=2                FTN 4.6+453          77/31/73  23.53.41

      1                 SUBROUTINE BUDGOF                                          BUDGOF     2
                        COMMON / BUDG / TOTC(7,2), TOTS(4,2,7), LENRS, TERGOOC(135 )  BUDG     2
                      C                                                            BUDG     3
                      C                                                            MS2      2
                      C ************** MS (LENGTH AND COUNTER) COMMON **************  MS2      3
                      C                                                            MS2      4
                      C                                                            MS2      5
                      C       LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH  MS2    6
                      C                         (TYPICALLY 150)                    MS2      7
     10               C       NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)  MS2   8
                      C       ICOTR           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT  MS2     9
                      C                         ELEMENTS TABLE                     MS2     10
                      C       L150            - (150) WORDS) RECORD LENGTH OF 7 ARRAYS  MS2   11
                      C                         IN THE "CERVLS" COMMON             MS2     12
     15               C       L950            - (950 WORDS) RECORD LENGTH OF 2 ARRAYS  MS2   13
                      C                         IN THE "CERVLS" COMMON             MS2     14
                      C                                                            MS2     15
                                COMMON / MS2 / LENR,NWBS,ICOTR,L150,L950           MS2     16
                      C                                                            MS2     17
     20               C                                                            MS2     18
                      C                                                            MS2     19
                      C                                                            SYST     2
                      C ********************* NAMES COMMON *************************  SYST     3
                      C                                                            SYST     4
     25               C       NMSYS           - NAME OF THE SYSTEM                 SYST     5
                      C       NOSLB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED  SYST   6
                      C       NMSLB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS  SYST     7
                      C       NOCOMP( )       - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)  SYST  8
                      C                         (RUNNING TOTAL FOR EQUIPMENTS)     SYST     9
     30               C       NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES  SYST  10
                      C                         IN NOSOUT (INDEXED BY EQUIPMENT NUMBER  SYST  11
                      C                         AND SHIPCLASS NUMBER)              SYST    12
                      C       NAMESL( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)  SYST  13
                      C                         FOR EQUIPMENT QUANTITIES TABLE - FLEET  SYST  14
     35               C                         SUMMARY                            SYST    15
                      C       EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)  SYST  16
                      C       SHIPNM          - PRESENT SHIPCLASS (BEING PROCESSED)  SYST  17
                      C                                                            SYST    18
                      C                                                            SYST    19
     40                 COMMON / NAMES  /  NMSYS, NOSLB, NMSUB(2,43), NOCOMP(43),  SYST    20
                       1         NMCOMP(2,100,43),NAMESL(100,2),EQUI,SHIPNM        SYST    21
                        INTEGER EQUI,SHIPNM                                        SYST    22
                      C ***************MISC (MISCELLANEOUS) COMMON ****************  SYST    23
                      C                                                            SYST    24
     45               C       NAP             - COUNT OF DIFFERENT APPROPRIATION CODES  SYST  25
                      C       APPRC( )        - APPROPRIATION CODE NAMES           SYST    26
                      C       SPCL( , )       - PERCENTAGES FOR CBS ELEMENT COST SPLITS  SYST  27
                      C       NPH             - COUNT OF THE LIFE CYCLE PHASES     SYST    28
                      C       IPH( )          - FIRST CBS ELEMENT NUMBER OF EACH PHASE  SYST  29
     50               C       IPB( )          - CBS ELEMENT NUMBER FOR PAGE BREAKS  SYST   30
                      C                         (LAST CBS NUMBER FOR THE PAGE)     SYST    31
                      C       IPHASE( , )     - TITLES OF CBS PHASES               SYST    32
                      C       FLEET2          - FLEET (SYSTEM) SIZE                SYST    33
                      C       NROLL( )        - LOWEST COST ELEMENT LEVEL TO BE PRINTED  SYST  34
     55               C                         (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)  SYST  35
                      C       ROTOT           - TOTAL ROTOR COST                   SYST    36
                      C       TOTINV          - TOTAL INVESTMENT COST MINUS TOTAL SIFOUT  SYST  37
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C       TOTRIP          - TOTAL RIPOUT COST                                  SYST
C       SMISRL          - MISSILE OUT&E COST                                 SYST
C       NOFLY           - NUMBER OF OBS ELEMENTS TO BE INCLUDED IN           SYST
C                         FLYAWAY COSTS                                      SYST
C       IFLYROW( )      - OBS ELEMENT NUMBER FOR FLYAWAY COSTS               SYST
C       NOYRS           - NUMBER OF YEARS IN SHIP INSTALLATION TABLE         SYST
C       IYEARS          - YEARS COVERED BY THE SHIP INSTALLATION TABLE       SYST
C       IYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE         SYST
C                         PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE)    SYST
C       FNOTES( , )     - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS        SYST
C                                                                            SYST
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPP,IPH(4),IPB(3),            SYST
     1          IPHASE(2,4),FLEETZ,NROLL(4),RDTOT,TOTINV,TOTRIP,             SYST
     2          SMISRD,NOFLY,IFLYROW(25),NOYRS,IYEARS(12),IYRS,              SYST
     3          FNOTES(5,12)                                                 SYST
      INTEGER APPRO,SPCL,FLEETZ                                              SYST
C                                                                            SYST
C                                                                            SHIPINS
C ********** MARRAY (IREC ARRAY) COMMON ******************                    SHIPINS
C                                                                            SHIPINS
C                                                                            SHIPINS
C     THE IREC ARRAY IS A SINGLY-SUBSCRIPTED ARRAY WHOSE FIRST POSITION      SHIPINS
C IS THE TOTAL NUMBER OF UNIQUE SHIPCLASS/EQUIPMENT COMBINATIONS.            SHIPINS
C THE NEXT THREE POSITIONS START A SERIES OF TRIPLETS WHOSE                  SHIPINS
C MEMBERS ARE: SHIPCLASS NAME, EQUIPMENT NAME, MS 3 INDEX.                   SHIPINS
C       IREC(1)         - THE RUNNING SUM OF THE TOTAL NUMBER OF UNIQUE      SHIPINS
C                         SHIPCLASS/EQUIPMENT COMBINATION IN THE             SHIPINS
C                         EQUIPMENT LEVEL INPUT                              SHIPINS
C       IREC(2,5,8,     - THE NAME OF THE SHIP CLASS                         SHIPINS
C            11,ETC)                                                         SHIPINS
C       IREC(3,6,9      - THE NAME OF THE EQUIPMENT                          SHIPINS
C            12,ETC)                                                         SHIPINS
C       IREC(4,7,10     - INDEX FOR MASS STORAGE UNIT 3.  AN INTEGER         SHIPINS
C            13,ETC)      NUMBER BEGINNING A 18 AND INCREMENTING BY          SHIPINS
C                         2 TO FORM 18,20,22,24,ETC.  THIS INDEX IS          SHIPINS
C                         THE STARTING LOCATION OF A RECORD (LENGTH:         SHIPINS
C                         "NWBS WORDS") ON MASS STORAGE 3 WHICH              SHIPINS
C                         CONTAINS THE UNIT COSTS OF THE EQUIPMENTS          SHIPINS
C                         ON A UNIT SHIP (COMPUTED BY SUBROUTINE             SHIPINS
C                         COMPCMP).                                          SHIPINS
C                                                                            SHIPINS
      COMMON / MARRAY / IREC(3750)                                           SHIPINS
C                                                                            SHIPINS
C **** SHIPINS (SHIP SUMMATION AND INSTALLATION TABLE) COMMON *****           SHIPINS
C                                                                            SHIPINS
C       SHIPSUM( )      - CONTAINS THE TOTAL NUMBER OF UNIT SHIPS FOR        SHIPINS
C                         EACH SHIP CLASS FOUND BY INSPECTION OF             SHIPINS
C                         THE SHIP INSTALLATION TABLE                        SHIPINS
C       SINSTB( , )     - THE SHIP DEPLOYMENT/INSTALLATION SCHEDULE          SHIPINS
C                         TABLE. FOR EACH SHIP CLASS:                        SHIPINS
C                            SINSTB(X,1)   - SHIP CLASS NAME                 SHIPINS
C                            SINSTB(X,2-7) - THE YEARLY NUMBERS OF           SHIPINS
C                                   UNIT SHIPS OF THIS CLASS TO BE           SHIPINS
C                                   DEPLOYED/INSTALLED                       SHIPINS
C       SHIPSM( )       - THE TOTAL NUMBER OF UNIT SHIPS FOR EACH            SHIPINS
C                         SHIP CLASS.  IT IS THE SAME COUNT AS               SHIPINS
C                         SHIPSUM, HOWEVER, IT IS DEFINED IN A               SHIPINS
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SUBROUTINE BUCGOP     (4720    OPT=2                FTN 4.6+433        77/11/9  23.55.41

110         C                     SPECIFIC ORDER AFTER ERROR-CHECKING IN          SHIPINS    42
            C                     SCOMP'S NESTED DO-LOOPS WHICH                   SHIPINS    43
            C                     DETERMINE THE TOTAL COSTS BY SHIP CLASS         SHIPINS    44
            C                                                                     SHIPINS    45
                  COMMON / SHIPINS / SHIPSUM(43), SINSTB(43,7), SHIPSM(43)        SHIPINS    46
120               INTEGER SHIPSUM, SINSTB, SHIPSM                                 SHIPINS    47
                  DIMENSION SYTOT(6,3), STOT(8,3), TOT(6),NMS(2),NMC(2)           BUCCOP     7
                  DIMENSION CGT(3)                                                BUCCOP     8
            C                                                                     BUCGOP     9
                  INTEGER CGT                                                     BUCCOP     10
130               DATA CGT /1HCONTRACTOR , 1 HGOVERNMENT, 1HTOTAL (C+G) /         BUCCOP     11
                  DATA IPLUS/1H+/, ICLANK/1H /, IZERO/1H /, IMINUS/1H-/, ICMA/1H,/ BUCCOP     12
                  DO 1 J=1,6                                                      BUCCOP     13
                  DO 1 K=1,3                                                      BUCGOP     14
                1 SYTOT(J,K) = 0.0                                                BUCCOP     15
140         C                                                                     BUCGOP     16
                  I = 0                                                           BUCCOP     17
                  DO 150 IS = 1,NOSUB                                             BUCCOP     18
            C                                                                     BUCGOP     19
            C                     OUTPUT PAGE HEADINGS                            BUCCOP     20
150               CALL HEAD                                                       BUCGOP     21
                  WRITE (6,1001) IPLUS,FLEET2                                     BUCCOP     22
                  NCOMP = NOCOMP(IS)                                              BUCCOP     23
                  CALL REPRT (NMSUB(1,IS),NMS,2,1HL )                             BUCGOP     24
                  DO 10 J=1,6                                                     BUCCOP     25
160               DO 10 K=1,3                                                     BUCGOP     26
               10 STOT(J,K) = 0.0                                                 BUCCOP     27
                  DO 130 IC = 1,NCOMP                                             BUCGOP     28
                  I= I+1                                                          BUCCOP     29
                  IF (IMOD(IC-1),11)).NE.0) GO TO 20                              BUCCOP     30
170               KARAK = IZERO                                                   BUCGOP     31
                  IF (IC.GT.1) KARAK = ICMA                                       BUCCOP     32
                  WRITE (6,1011) KARAK,NMS,APPRO                                  BUCCOP     33
                2 CTOT = 0                                                        BUCCOP     34
                  GTOT = 0                                                        BUCGOP     35
180         C                                                                     BUCCOP     36
            C                     GET TOTC ARRAY FOR THIS C/S COMBO, FROM UNIT 9  BUCGOP     37
                  CALL READMS ( 9, TOTC, LENR, I)                                 BUCCOP     38
                  DO 40 J=1,7                                                     BUCCOP     39
                  TOTC(J,1) = TOTC(J,1) * FLOAT(SHIPSM(I))                        BUCCOP     40
190               TOTC(J,2) = TOTC(J,2) * FLOAT(SHIPSM(I))                        BUCCOP     41
                  CTOT = CTOT + TOTC(J,1)                                         BUCGOP     42
                  GTOT = GTOT + TOTC(J,2)                                         BUCGOP     43
                40 TOT(J) = TOTC(J,1) + TOTC(J,2)                                 BUCCOP     44
                  TOT(8) = CTOT + GTOT                                            BUCGOP     45
200               CALL REPRT (NMCOMP(1,IC,IS), NMC,2,1HL)                         BUCGOP     46
                  IF (NMC(1).NE.1H ) WRITE (6,1,2,) NMC(1), NMC(2)                BUCCOP     47
                  WRITE(6,1031) (CGT(1), (TOTC(K,1), K=1,7), CTOT                 BUCCOP     48
                  WRITE(6,1032) CGT(2), (TOTC(K,2), K=1,7), GTOT                  BUCGOP     49
                  WRITE(6,1033) CGT(3),  (TOT(K), K=1,8)                          BUCCOP     50
210               DO 50 J=1,7                                                     BUCCOP     51
                  DO 50 K=1,3                                                     BUCGOP     52
                50 STOT(J,K) = STOT(J,K) + TOTC(J,K)                              BUCCOP     53
                  STOT(8,1) = STOT(8,1) + CTOT                                    BUCCOP     54
                  STOT(8,2) = STOT(8,2) + GTOT                                    BUCCOP     55
220             10 CONTINUE                                                       BUCCOP     56
                  IF (NCOMP.EQ.1) GO TO 112                                       BUCCOP     57
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      DO 101 J=1,8
  101 STOT(J,3) = STOT(J,1) + STOT(J,2)
      WRITE (6,1050)
      WRITE(6,1030) (CGT(K),(STOT(J,K),J=1,8),K=1,3)
  102 CONTINUE
      DO 103 J=1,8
      DO 103 K=1,2
  103 SYTOT(J,K) = SYTOT(J,K) + STOT(J,K)
   15 CONTINUE
C        OUTPUT SYSTEM TOTALS
  110 WRITE (6,1040) FLEETZ
      DO 120 J=1,8
  120 SYTOT(J,3) = SYTOT(J,1) + SYTOT(J,2)
      WRITE(6,1030) (CGT(K),(SYTOT(J,K),J=1,8),K=1,3)
      RETURN
 1000 FORMAT(A1,48X,*LIFE CYCLE COSTS BY BUDGET APPROPRIATION*/
     1          50X,*BY EQUIPMENT ELEMENT WITHIN SHIP CLASS*/
     2                    60X,I5,* SHIP FLEET* /
     3                      65X,* (FY79 $M)*/
     4    1H0,6X,122(1H-)  )
 1001 FORMAT (A1,6X,2A10,3X,7(8X,A4),6X,*SYS TOT* /
     1          7X,24(1H-),2X,8(2X,10(1H-)) )
 1020 FORMAT (11X,A10,A9)
 1030 FORMAT(15X,A10,6X,8F12.3)
 1040 FORMAT (1H-,6X,I5,* SHIP FLEET TOTAL* / 7X,24(1H-) )
 1050 FORMAT (1H0,10X,*SHIP CLASS TOTAL* / 10X,18(1H-) )
      END
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SUBROUTINE INPUT1     V4.7+   OPT=2                FTN 4.6+435        77/01/19  23.53.41

      SUBROUTINE INPUT1                                                    INPUT1      2
C                                                                          SYST        3
C ********************* NAMES COMMON ************************            SYST        4
C                                                                          SYST        5
C     NMSYS           - NAME OF THE SYSTEM                                 SYST        6
C     NOSUB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED             SYST        7
C     NMSUB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS                 SYST        8
C     NCOMP( )        - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)           SYST        9
C                       (RUNNING TOTAL FOR EQUIPMENTS)                     SYST       10
C     NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES            SYST       11
C                       IN WRSOUT (INDEXED BY EQUIPMENT NUMBER             SYST       12
C                       AND SHIPCLASS NUMBER)                              SYST       13
C     NAMESC( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)          SYST       14
C                       FOR EQUIPMENT QUANTITIES TABLE - FLEET             SYST       15
C                       SUMMARY                                            SYST       16
C     EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)                SYST       17
C     SHIPNM          - PRESENT SHIPCLASS (BEING PROCESSED)                SYST       18
C                                                                          SYST       19
C                                                                          SYST       20
      COMMON / NAMES  / NMSYS, NOSUB, NMSUB(2,43), NOCOMP(43),             SYST       21
     1          NMCOMP(2,10),43),NAMESC(10,2),EQUI,SHIPNM                  SYST       22
      INTEGER EQUI,SHIPNM                                                  SYST       23
C ***************MISC (MISCELLANEOUS) COMMON ******************           SYST       24
C                                                                          SYST       25
C     NAP             - COUNT OF DIFFERENT APPROPRIATION CODES             SYST       26
C     APPRO( )        - APPROPRIATION CODE NAMES                           SYST       27
C     SPCL( , )       - PERCENTAGES FOR CBS ELEMENT COST SPLITS            SYST       28
C     NPH             - COUNT OF THE LIFE CYCLE PHASES                     SYST       29
C     IPH( )          - FIRST CBS ELEMENT NUMBER OF EACH PHASE             SYST       30
C     IPB( )          - CBS ELEMENT NUMBER FOR PAGE BREAKS                 SYST       31
C                       (LAST CBS NUMBER FOR THE PAGE)                     SYST       32
C     IPHASE( , )     - TITLES OF CBS PHASES                               SYST       33
C     FLEET2          - FLEET (SYSTEM) SIZE                                SYST       34
C     NPOLL( )        - LOWEST COST ELEMENT LEVEL TO BE PRINTED            SYST       35
C                       (LOWEST LEVEL TO BE POLLED OF WITHIN PHASE)        SYST       36
C     RDTOT           - TOTAL ROTEX COST                                   SYST       37
C     TOTINV          - TOTAL INVESTMENT COST MINUS TOTAL RIFOUT           SYST       38
C     TOTRIF          - TOTAL RIFOUT COST                                  SYST       39
C     SMISRC          - MISSILE ROTEX COST                                 SYST       40
C     NOFLY           - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN           SYST       41
C                       FLYAWAY COSTS                                      SYST       42
C     IFLYAW( )       - CBS ELEMENT NUMBER FOR FLYAWAY COSTS               SYST       43
C     NOYRS           - NUMBER OF YEARS IN SHIP INSTALLATION TABLE         SYST       44
C     IYEARS          - YEARS COVERED BY THE SHIP INSTALLATION TABLE       SYST       45
C     IYRS            - NUMBER OF YEARS IN "SHIP" INSTALLATION TABLE       SYST       46
C                       PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE)    SYST       47
C     FNOTES( , )     - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS        SYST       48
C                                                                          SYST       49
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),          SYST       50
     1          IPHASE(2,4),FLEET2,NPOLL(4),RDTOT,TOTINV,TOTRIF,           SYST       51
     2          SMISRC,NOFLY,IFLYAW(25),NOYRS,IYEARS(12),IYRS,             SYST       52
     3          FNOTES(5,12)                                               SYST       53
      INTEGER APPRO,SPCL,FLEET2                                            SYST       54
C                                                                          PSC        2
C ************** MS (LENGTH AND COUNTER) COMMON ****************          PSC        3
C                                                                          PSC        4
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C                                                                       MS2      5
C       LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH       MS2      6
C                         (TYPICALLY 1FF)                               MS2      7
C       NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)       MS2      8
C       ICCTP           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT         MS2      9
C                         ELEMENTS TABLE                                MS2     10
C       L150            - (150 WORDS) RECORD LENGTH OF 7 ARRAYS         MS2     11
C                         IN THE "CERVLS" COMMON                        MS2     12
C       L900            - (900 WORDS) RECORD LENGTH OF 2 ARRAYS         MS2     13
C                         IN THE "CERVLS" COMMON                        MS2     14
C                                                                       MS2     15
      COMMON / MS2 / LENR,NWBS,ICCTP,L150,L1[illegible]                 MS2     16
C                                                                       MS2     17
C                                                                       MS2     18
C                                                                       MS2     19
C                                                                       NPUT     2
C************************** NPUT COMMON ***************************    NPUT     3
C                                                                       NPUT     4
C VARIOUS OTHER ARRAYS ARE EQUIVALENCED TO THE "ARAY" ARRAY AS IN:      NPUT     5
C                                                                       NPUT     6
C  - SLCOM  : ROW    = ARAY(1,1)                                        NPUT     7
C  - BUDGET : CG     = ARAY(1,2)                                        NPUT     8
C  - INPUPD : ICREC  = ARAY(1,1)                                        NPUT     9
C  - COMPCMP: ROW    = ARAY(1,1)                                        NPUT    10
C  - APCELM : IRAY   = ARAY(1,1)                                        NPUT    11
C                                                                       NPUT    12
      COMMON / NPUT    /  ARAY(150,2)                                   NPUT    13
C                                                                       NPUT    14
C                                                                       CERVLS   2
C                                                                       CERVLS   3
C ***** CERVLS (COST ESTIMATING RELATIONSHIP (CER) VALUES) COMMON ****** CERVLS   4
C                                                                       CERVLS   5
C     THE CERVLS COMMON CONTAINS LOCATIONS FOR STORAGE OF THE CER       CERVLS   6
C INPUT CARD COUNT, THE ROW ID'S, THE CER EQUATION NUMBERS, THE         CERVLS   7
C ROW CROSS REFERENCE NUMBERS, THE INPUT PARAMETERS, THE ADDITION       CERVLS   8
C OR CERS CONTROL, STORAGE ARRAY FOR EQUIPMENT NAME, CER INDEX,         CERVLS   9
C AND TPUT/NPUT INDEXES FOR ALL EQUIPMENT INPUT.                        CERVLS  10
C                                                                       CERVLS  11
C       CERCT           - NUMBER OF CER'S FOR THIS PARTICULAR EQUIPMENT CERVLS  12
C                         (1 WORD)                                      CERVLS  13
C       IFORC( )        - (F OR C) ALPHABETIC CHARACTER INDICATING      CERVLS  14
C                         'FACTOR' OR 'CER'.   (15  WORDS)              CERVLS  15
C       IROWID          - CBS ELEMENT NUMBER TO WHICH THIS CER APPLIES  CERVLS  16
C                         (150 WORDS)                                   CERVLS  17
C       IADD            - CER CONTROL FLAGS (0 THRU 6) FOR ADDITIVE     CERVLS  18
C                         CERS OF SUBELEMENTS. 0 INDICATES NO ADDING.   CERVLS  19
C                         1 THRU 6 INDICATE ADD UP SUB-ELEMENTS.        CERVLS  20
C                         (150 WORDS)                                   CERVLS  21
C       ICERNO          - REFERENCE NUMBER FOR CER EQUATIONS IN THE     CERVLS  22
C                         'CERCOMP' SUBROUTINE.  (150 WORDS)            CERVLS  23
C       IXREFNO         - CBS ELEMENT NUMBER USED IN CROSS REFERENCING  CERVLS  24
C                         A PREVIOUSLY COMPUTED CBS ELEMENT.  AT PRESENT CERVLS  25
C                         ONLY CER EQUATION NUMBER 6 ALLOWS CROSS       CERVLS  26
C                         REFERENCING.   0 INDICATES NO CROSS-REF.      CERVLS  27
C                         (150 WORDS)                                   CERVLS  28
C       IXREFAD         - CER CONTROL FLAGS FOR CROSS-REFERENCING       CERVLS  29
C                         CER SUB-ELEMENTS. (150 WORDS)                 CERVLS  30
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C       IFSTORE          - STORES 'FACTOR' PARAMETERS. (900 WORDS)
C       PSSTORE          - STORES NUMBERICAL PARAMETERS. (900 WORDS)
C       ICER( )          - A SINGLY-SUBSCRIPTED ARRAY CONTAINING A
C                          MAXIMUM OF 100 DATA TRIPLETS WHOSE MEMBERS
C                          ARE:
C         ICER(1,4,7,    - EQUIPMENT NAME
C              ETC)
C         ICER(2,4,8     - INDEX FOR MASS STORAGE UNIT 3.  INDEX
C              ETC)        BEGINS AT 1 AND INCREMENTS BY 9 (1,10,19,
C                          ETC). THE FOLLOWING DATA RECORDS ARE
C                          INDEXED:
C                             1   CERCT        6   IXREFNO
C                             2   IFORC        7   IXREFAD
C                             3   IROWID       8   IFSTORF
C                             4   IADD         9   PSSTORF
C                             5   ICERNO
C         ICER(3,6,9     - INDEX FOR MASS STORAGE UNIT 2 AND 3.
C                          INDEX BEGINS AT 18 AND INCREMENTS BY 2
C                          (18,20,22,ETC) AND IS IDENTICAL TO THE
C                          THIRD MEMBER OF DATA TRIPLET STORED IN
C                          THE IREC ARRAY.
C       SUBELS( , )      - SUBELS IS A CROSS-HATCHED ARRAY WHICH IS
C                          RELATED ONE-TO-ONE TO THE CBS.
C                          IT IS USED LOCALLY WITHIN 'COMPCMP' AND
C                          'CERCOMP' FOR INTERIM STORAGE OF UP TO
C                          SIX SUBELEMENTS, 1 THRUPUT, AND 1 TOTAL
C                          VALUE   FOR EACH CBS ELEMENT.
C       FACTOR( )        - A FACTOR IS A PRECURSOR OF ONE OR MORE
C                          CERS.
C
C
      COMMON /CERVLS/ CERCT, IFORC(150), IROWID(150), IADD(150),
     C                ICERNO(150), IXREFNO(150),IXREFAD(150),
     2                 IFSTORE(6,150),PSSTORE(6,150),ICER(300),
     C                SUBELS(8,150), FACTORS(150)
      INTEGER CERCT
C
C ******************** ROLUPCT COMMON ************************
C
C         ARRAY DEFINING THE ROLL-UP INPUT NUMBERS, TOTAL COUNT OF
C         COST ELEMENTS WITH SPECIFIC ROLL-UP NUMBERS TO BE OUTPUT,
C         ARRAY OF SELECTED WBS ELEMENTS NUMBERS, SELECTED ROLL-UP
C         OUTPUT FLAG
      COMMON / ROLUPCT /  IROLL(150), ROLLTOT, ROLLSL(150), ROLLFLG
      INTEGER ROLLTOT, ROLLSL, ROLLFLG
C
C ********************** BUDG COMMON ************************
C
      COMMON / BUDG / TOTC(7,2), TOTS(4,2,7), LENR9, IPROCCD(1250)
C
C
C ********************CHARTS (CONTROL) COMMON ********************
C
C
C       CHRTCNT CONTAINS THE MAJOR OUTPUT CHART CONTROLS
C                  0   - GENERATE CHART
C                  1   - NO GENERATION OF CHART
```

```
C                                                                       CHARTS     9
C       CHRTCNT(1)      - IF EQUAL TO 0 - CALLS WBSOUT(1) FOR EQUIPMENT CHARTS    10
C                         ELEMENT LIFE CYCLE COSTS - FLEET SUMMARY      CHARTS    11
C       CHRTCNT(2)      - IF EQUAL TO 0 - CALLS WBSOUT(2) FOR UNIT      CHARTS    12
C                         SHIP COSTS BY EQUIPMENT ELEMENT               CHARTS    13
C                       - IF NE. TO 0   - CALLS WBSTOT BECAUSE          CHARTS    14
C                         WBSOUT(2) WAS NOT CALLED                      CHARTS    15
C       CHRTCNT(3)      - IF EQUAL TO 0 - CALLS WBSOUT(3) FOR SHIP      CHARTS    16
C                         CLASS SUMMARY                                 CHARTS    17
C       CHRTCNT(4)      - IF EQUAL TO 0 - CALLS BUDGOP FOR LIFE         CHARTS    18
C                         CYCLE COSTS BY BUDGET APPROPRIATIONS          CHARTS    19
C       CHRTCNT(5)      - IF NE. TO 0   - CALLS ROLCNT FOR OUTPUT BY    CHARTS    20
C                         ROLL-UP NUMBER                                CHARTS    21
C       CHRTCNT(6)      - IF EQUAL TO 0 - LISTS THE SUBELS ARRAY        CHARTS    22
C                         FOR ENTIRE CBS FOR PROOFING                   CHARTS    23
C                                                                       CHARTS    24
C                                                                       CHARTS    25
      COMMON / CHARTS  /  CHRTCNT(15)                                   CHARTS    26
      INTEGER CHRTCNT                                                   CHARTS    27
C ********** CSTAB (EQUIPMENT QUANTITIES) COMMON ****************       CSTAB      2
C                                                                       CSTAB      3
C       QCMPT           - QUANTITY OF EQUIPMENT ALREADY DEPLOYED        CSTAB      4
C                         (O & S ) OVER ALL SHIPCLASSES (Q1) (INTEGER)  CSTAB      5
C       QCMPT2          - QUANTITY OF EQUIPMENT TO BE MANUFACTURER      CSTAB      6
C                         INSTALLED (INVESTMENT) OVER ALL SHIPCLASSES   CSTAB      7
C                         (Q2) (REAL)                                   CSTAB      8
C       CSTABLE         - SINGLY-DIMENSIONED ARRAY WHOSE MEMBERS ARE    CSTAB      9
C                         A SERIES OF:                                  CSTAB     10
C                               --SHIPCLASS NAME                        CSTAB     11
C                               --O & S QUANTITY OF EQUIPMENT FOR EACH  CSTAB     12
C                                 SHIP ON A PARTICULAR SHIPCLASS        CSTAB     13
C                               --INV QUANTITY OF EQUIPMENT FOR EACH    CSTAB     14
C                                 SHIP ON A PARTICULAR SHIPCLASS        CSTAB     15
C                         (THESE THREE MEMBERS ARE GIVEN FOR EACH       CSTAB     16
C                          SHIP CLASS MAKING A SERIES OF DATA TRIPLETS) CSTAB     17
C                         (VALUES ARE INTEGER)                          CSTAB     18
C       CSTABEL         - SINGLY-DIMENSIONED ARRAY OF THE INVESTMENT    CSTAB     19
C                         QUANTITY OF EQUIPMENT FOR EACH SHIP ON A      CSTAB     20
C                         PARTICULAR SHIPCLASS. DATA ELEMENTS MUST      CSTAB     21
C                         BE STORED IN THE SAME SHIPCLASS ORDER AS      CSTAB     22
C                         CSTABLE.  THE TWO ARRAYS MAY BE THOUGHT       CSTAB     23
C                         OF AS A SERIES OF DATA QUADRUPLETS.           CSTAB     24
C                                                                       CSTAB     25
C                                                                       CSTAB     26
      COMMON /CSTAB/QCMPT(100),QCMPT2(100),CSTABLE(3750),CSTABEL(1250)  CSTAB     27
      INTEGER QCMPT,CSTABLE                                             CSTAB     28
C        GENERAL TITLE TO BE USED ON ALL CHARTS                         GENTLE     2
      COMMON / GENTLE  /  TITLE(3)                                      GENTLE     3
      INTEGER TITLE                                                     GENTLE     4
C                                                                       SHIPINS    2
C ********** MARRAY (IREC ARRAY) COMMON ******************             SHIPINS    3
C                                                                       SHIPINS    4
C                                                                       SHIPINS    5
C     THE IREC ARRAY IS A SINGLY-SUBSCRIPTED ARRAY WHOSE FIRST POSITION SHIPINS    6
C IS THE TOTAL NUMBER OF UNIQUE SHIPCLASS/EQUIPMENT COMBINATIONS.       SHIPINS    7
C THE NEXT THREE POSITIONS START A SERIES OF TRIPLETS WHOSE             SHIPINS    8
C MEMBERS ARE: SHIPCLASS NAME, EQUIPMENT NAME, MS 3 INDEX.              SHIPINS    9
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      C     IREC(1)          - THE RUNNING SUM OF THE TOTAL NUMBER OF UNIQUE   SHIPINS  10
230   C                        SHIPCLASS/EQUIPMENT COMBINATION IN THE           SHIPINS  11
      C                        EQUIPMENT LEVEL INPUT                            SHIPINS  12
      C     IREC(2,5,8,      - THE NAME OF THE SHIP CLASS                       SHIPINS  13
      C          11,ETC)                                                       SHIPINS  14
      C     IREC(3,6,9       - THE NAME OF THE EQUIPMENT                        SHIPINS  15
235   C          12,ETC)                                                       SHIPINS  16
      C     IREC(4,7,10      - INDEX FOR MASS STORAGE UNIT 3.  AN INTEGER       SHIPINS  17
      C          13,ETC)       NUMBER BEGINNING A 1 AND INCREMENTING BY       SHIPINS  18
      C                        2 TO FORM 18,20,22,24,ETC.  THIS INDEX IS       SHIPINS  19
      C                        THE STARTING LOCATION OF A RECORD (LENGTH       SHIPINS  20
240   C                        "NAMES WORDS") ON MASS STORAGE 3 WHICH          SHIPINS  21
      C                        CONTAINS THE UNIT COSTS OF THE EQUIPMENTS       SHIPINS  22
      C                        ON A UNIT SHIP (COMPUTED BY SUBROUTINE          SHIPINS  23
      C                        COMPCMP).                                       SHIPINS  24
      C                                                                        SHIPINS  25
245         COMMON / MARRAY / IREC(3750)                                       SHIPINS  26
      C                                                                        SHIPINS  27
      C **** SHIPINS (SHIP SUMMATION AND INSTALLATION TABLE) COMMON *****      SHIPINS  28
      C                                                                        SHIPINS  29
      C     SHIPSUM( )       - CONTAINS THE TOTAL NUMBER OF UNIT SHIPS FOR     SHIPINS  30
250   C                        EACH SHIP CLASS FOUND BY INSPECTION OF          SHIPINS  31
      C                        THE SHIP INSTALLATION TABLE                     SHIPINS  32
      C     SINSTB( , )      - THE SHIP DEPLOYMENT/INSTALLATION SCHEDULE       SHIPINS  33
      C                        TABLE. FOR EACH SHIP CLASS:                     SHIPINS  34
      C                           SINSTB(X,1)   - SHIP CLASS NAME              SHIPINS  35
255   C                           SINSTB(X,2-7) - THE YEARLY NUMBERS OF        SHIPINS  36
      C                                 UNIT SHIPS OF THIS CLASS TO BE         SHIPINS  37
      C                                 DEPLOYED/INSTALLED                     SHIPINS  38
      C     SHIPSM( )        - THE TOTAL NUMBER OF UNIT SHIPS FOR EACH         SHIPINS  39
      C                        SHIP CLASS.  IT IS THE SAME COUNT AS            SHIPINS  40
260   C                        SHIPSUM, HOWEVER, IT IS DEFINED IN A            SHIPINS  41
      C                        SPECIFIC ORDER AFTER ERROR-CHECKING IN          SHIPINS  42
      C                        SLOOM'S NESTED CO-LOOPS WHICH                   SHIPINS  43
      C                        DETERMINE THE TOTAL COSTS BY SHIP CLASS         SHIPINS  44
      C                                                                        SHIPINS  45
265         COMMON / SHIPINS / SHIPSUM(43), SINSTB(43,7), SHIPSM(43)           SHIPINS  46
            INTEGER SHIPSUM, SINSTB, SHIPSM                                    SHIPINS  47
            DIMENSION IOREC(2)                                                 INFUPC   14
      C***  SETUP INDEX ARRAYS, MS INDEX LENGTHS, AND MS RECORD LENGTHS        INFUPC   15
      C***                                                                     INFUPC   16
270         DIMENSION IX2(221),IX3(221),IX4(221)                               INFUPC   17
            DIMENSION IX8(901),IX9(1251),IX10(1301)                            INFUPC   18
            DIMENSION INP(5)                                                   INFUPC   19
            DIMENSION FS(6),PS(6)                                              INFUPC   20
            INTEGER FS                                                         INFUPC   21
275         DIMENSION NM(2)                                                    INFUPC   22
            EQUIVALENCE (ARAY,IOREC)                                           INFUPC   23
            INTEGER CHAR,SHIP,SAVE                                             INFUPC   24
            INTEGER SNAME, CHAR1, CHAR2                                        INFUPC   25
            INTEGER CEREND,EFORSI,PROMIC,ADDID,CERNO,XREFNC,XREFAC,CERCTX6     INFUPC   26
280         DATA IXS/1/, IXMBS/2/, IXSO/7/, IXSS/17/, IXSSO/18/, LENR/150/     INFUPC   27
            DATA LENF / 220 /, CHAR / 10H          /                           INFUPC   28
            DATA LNES/5/, LSO/10/, LSC/2/                                      INFUPC   29
      C                                                                        INFUPC   30
      C              MASK TO GET THE FIRST 6 CHARACTERS OF EITHER THE          INFUPC   31
285   C          SHIP CLASS OR EQUIPMENT NAMES                                 INFUPC   32
```

```
      DATA MASK / 777777777777B,0000LLB /                                INFUPD  33
      DATA MASK2 /7777777777777700001LB/                                 INFUPD  34
C          INITIALIZE CHARACTER LOCATION USED TO DECODE ESTABLE           INFUPD  35
C          LOCATIONS & ROLL UP NUMBER, AND DECIMAL POINT LITERAL          INFUPD  36
      DATA CHAR1 / 1JH           /, MYDOT / 1H. /                        INFUPD  37
C                                                                        INFUPD  38
C          RECORD LENGTH INDEX IF UNIT 3                                 INFUPD  39
      DATA LENN17 / 3753 /                                               INFUPD  40
C          RECORD LENGTH UNIT 9                                          INFUPD  41
      DATA LENN9 / 14 /                                                  INFUPD  42
C          CER DATA STORE UNDER LENCER NO. OF INDEXES                    INFUPD  43
      DATA LENCER / 9 /                                                  INFUPD  44
      DATA LENF9   / 1250 /                                              INFUPD  45
      DATA LENF10  / 1330 /                                              INFUPD  46
      DATA INDXTOT / 1251 /                                              INFUPD  47
C          INDEX LENGTH OF CER UNIT 8                                    INFUPD  48
      DATA LENF8 / 900 /                                                 INFUPD  49
C          RECORD LENGTHS OF CER DATA ON MS UNIT 8                       INFUPD  50
      DATA L150 / 150 /, L900 / 900 /                                    INFUPD  51
C                                                                        INFUPD  52
C          SPECIAL FLAG (ISPFLG) TO DIFFERENTATE BETWEEN NORMAL          INFUPD  53
C          INPUT AND EQUIPMENT DEFINITION INPUT                          INFUPD  54
C           = 0 SYSTEM, SHIP CLASS, EQUIPMENT NAMES                      INFUPD  55
C           = 1 EQUIPMENT, TPUT, NPUT, CER, DATA                         INFUPD  56
      DATA ISPFLG / 0 /                                                  INFUPD  57
C                                                                        INFUPD  58
C          INITIALIZE THE CER INDEX COUNTER, CER SUBSCRIPT               INFUPD  59
C          STORAGE COUNTER                                               INFUPD  60
      DATA INDCER / -8 /, ISUBCER / 0 /                                  INFUPD  61
      DATA SPCL / 0,0,0 /                                                INFUPD  62
      DATA NAF, APPRO/7,4HROTE,3HSCN,3HWPN,3HOPN,3HMCN,3HPPN,3HOPN/      INFUPD  63
C     SET UP SHIP CLASS AND EQUIPMENT NAMES                              INFUPD  64
C                                                                        INFUPD  65
C     INITIALIZE THE EQUIPMENT SAVE COUNTER (FOR INDEXES)                INFUPD  66
C        BOTH EQUIPMENT AND CER                                          INFUPD  67
      ICCTR = 0                                                          INFUPD  68
C                                                                        INFUPD  69
C     INITIALIZE THE SHIP AND EQUIPMENT COUNTERS                         INFUPD  70
      ISHPCT = 0                                                         INFUPD  71
      ICOMCT = 0                                                         INFUPD  72
C                                                                        INFUPD  73
      CALL OPENMS ( 2, IX2, LENF+1, 0 )                                  INFUPD  74
      CALL OPENMS (3,IX3,LENF+1,0)                                       INFUPD  75
      CALL OPENMS (4,IX4,LENF+1,0)                                       INFUPD  76
      CALL OPENMS ( 8, IX8, LENF8+1, 0 )                                 INFUPD  77
      CALL OPENMS (9,IX9,LENF9+1,0)                                      INFUPD  78
      CALL OPENMS (10,IX10,LENF10+1,0)                                   INFUPD  79
      WRITE(6,18)                                                        INFUPD  80
   18 FORMAT(1H1,9X,18HCARD INPUT LISTING //)                            INFUPD  81
C                                                                        INFUPD  82
C          READ IN GENERAL TITLE (MAXIMUM OF 26 CHARACTERS ALLOWED)      INFUPD  83
C                                                                        INFUPD  84
      READ(5,19) TITLE                                                   INFUPD  85
   19 FORMAT(26A10,A6)                                                   INFUPD  86
      WRITE(6,1919) TITLE                                                INFUPD  87
 1919 FORMAT(1HX,26A10,A6)                                               INFUPD  88
C  READ IN DATA PREVIOUSLY FOUND IN INIT                                 INFUPD  89
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SUBROUTINE INFUPD     74/74   OPT=2                    FTN 4.6+433        07/31/79  23.53.41

                      READ(5,805) NWES,NPH,(IPB(I),I=1,3)                              INFUPC     90
                      WRITE(6,807) NWES,NPH,(IPB(I),I=1,3)                             INFUPC     91
345                 805 FORMAT(5I5)                                                    INFUPC     92
                    807 FORMAT(1HX,5I5)                                                INFUPC     93
                  C                                                                    INFUPC     94
                      DO 71 K=1,4                                                      INFUPC     95
                      READ(5,806) IPHASE(1,K),IPHASE(2,K),IPH(K),NROLL(K)              INFUPC     96
350                   WRITE(6,806) IPHASE(1,K),IPHASE(2,K),IPH(K),NROLL(K)             INFUPC     97
                     71 CONTINUE                                                       INFUPC     98
                    806 FORMAT(2A10,2I5)                                               INFUPC     99
                    808 FORMAT(1HX,2A10,2I5)                                           INFUPC    100
                      DO 5 I=1,LENR                                                    INFUPC    101
355                   IREC(I) = 0                                                      INFUPC    102
                      5 IOREC(I) = 0                                                   INFUPC    103
                  C                                                                    INFUPC    104
                  C                                                                    INFUPC    105
                      DO 56 I=LENR,LENR17                                              INFUPC    106
360                   IREC(I) = 0                                                      INFUPC    107
                     56 CONTINUE                                                       INFUPC    108
                  C                  INITIALIZE THE CER ARRAYS                       INFUPC    109
                      CERCT = 0                                                        INFUPC    110
                      DO 6 I=1,L150                                                    INFUPC    111
365                   IFORC(I) = 10H                                                   INFUPC    112
                      IROWID(I) = 0                                                    INFUPC    113
                      ICERNO(I) = 0                                                    INFUPC    114
                      IXREFNC(I) = 0                                                   INFUPC    115
                      IXREFAD(I) = 0                                                   INFUPC    116
370                   IADD(I) = 0                                                      INFUPC    117
                      DO 6 J=1,6                                                       INFUPC    118
                      IFSTORE(J,I) = 10H                                               INFUPC    119
                      PSSTORE(J,I) = 0.                                                INFUPC    120
                     6 CONTINUE                                                        INFUPC    121
375               C***  USING "IOREC" AND "IREC", WRITE ALL ZERO RECORDS ON MS 4.      INFUPC    122
                      DO 10 I=1,LENF                                                   INFUPC    123
                      IF ( I .EQ. IXSS ) GO TO 10                                      INFUPC    124
                      CALL WRITMS ( 4, IOREC, LENR, I, -1 )                            INFUPC    125
                     10 CONTINUE                                                       INFUPC    126
380                   CALL WRITMS ( 4, IREC, LENR17, IXSS, -1 )                        INFUPC    127
                  C                                                                    INFUPC    128
                  C                  INITIALIZE THE CER STORAGE UNIT 8                INFUPC    129
                  C***  WRITE ZEROS AND BLANKS ON MS 8.                              INFUPC    130
                      DO 11 I=1,LENFC,LENCER                                           INFUPC    131
385                   CALL WRITMS (8, CERCT  , 1  , I  , -1)                           INFUPC    132
                      CALL WRITMS (8, IFORC  , L150, I+1, -1)                          INFUPC    133
                      CALL WRITMS (8, IROWID , L150, I+2, -1)                          INFUPC    134
                      CALL WRITMS (8, IADD   , L150, I+3, -1)                          INFUPC    135
                      CALL WRITMS (8, ICERNO , L150, I+4, -1)                          INFUPC    136
390                   CALL WRITMS (8, IXREFNO, L150, I+5, -1)                          INFUPC    137
                      CALL WRITMS (8, IXREFAD, L150, I+6, -1)                          INFUPC    138
                      CALL WRITMS (8, IFSTORE, L900, I+7, -1)                          INFUPC    139
                      CALL WRITMS (8, PSSTORE, L900, I+8, -1)                          INFUPC    140
                     11 CONTINUE                                                       INFUPC    141
395               C     GO TO 15                                                       INFUPC    142
                  C  12 CONTINUE                                                       INFUPC    143
                  C     READ (5,25) INF                                                INFUPC    144
                  C     IF (EOF(5)) 800,15                                             INFUPC    145
                  C  15 CONTINUE                                                       INFUPC    146
```

```
                C***  USING "IOREC" AND "IREC" (ZEROS), WRITE ZEROS ON FS 2.          INFLPO   147
                      DO 16 I=1,LENF                                                 INFLPO   148
                      IF ( I .EQ. IXSS ) GO TO 16                                    INFUPC   149
                      CALL READMS (4,IOREC,LENR,I)                                   INFUPC   150
                      CALL WRITMS ( 2, IOREC, LENR, I, -1 )                          INFUPC   151
                   16 CONTINUE                                                       INFLPC   152
                C                                                                    INFLPO   153
                      CALL READMS ( 4, IREC, LENR17, IXSS )                          INFUPC   154
                      CALL WRITMS ( 2, IREC, LENR17, IXSS, -1 )                      INFUPC   155
                      CALL READMS ( 2, IREC, LENR17, IXSS )                          INFLPC   156
                      IF (EOF(5).NE.0) GO TO 500                                     INFUPC   157
                C         READ AND DECODE INPUT DATA                                 INFLPO   158
                C         (SYSTEM--CBS, EQUIPMENT QUANTITIES PER SHIP)               INFUPC   159
                C                                                                    INFUPC   160
                   20 CONTINUE                                                       INFUPC   161
                      IF ( ISPFLG .EQ. 1 ) GO TO 910                                 INFLPC   162
                      READ (5,25) INP                                                INFUPC   163
                   25 FORMAT (8A10)                                                  INFUPO   164
                      IF (EOF(5)) 800, 30                                            INFLPC   165
                   30 WRITE (6,31) INP                                               INFLPC   166
                   31 FORMAT (1JX,8A10)                                              INFLPC   167
                C***  TEST FIRST 4 CHAR'S (INPUT) FOR SIGNIFICANCE.                  INFLPO   168
                C***                                                                 INFLPC   169
                      CALL MOVE (INP(1),1,CHAR,1,4)                                  INFLPC   170
                      IF (CHAR.EQ.4HINPUT) GO TO 250                                 INFLPC   171
                      IF (CHAR.EQ.4HTPUT) GO TO 200                                  INFLPO   172
                      IF (CHAR.EQ.4HEQUI) GO TO 150                                  INFUPC   173
                      IF (CHAR.EQ.4HSHIP) GO TO 100                                  INFUPC   174
                      IF (CHAR.EQ.4HSYST) GO TO  50                                  INFUPC   175
                      IF (CHAR.EQ.4H$END) GO TO 500                                  INFUPC   176
                C***  TEST FIRST CHAR FOR COMMENT CARD.                              INFUPC   177
                      CALL MOVE (CHAR,8,CHAR,2,3)                                    INFLPC   178
                      IF (CHAR.EQ.1H*) GO TO 20                                      INFUPO   179
                      IF (CHAR.EQ.1H$) GO TO 20                                      INFUPC   180
                      GO TO 300                                                      INFUPC   181
                C        SYSTEM CARD READ                                            INFLPC   182
                   50 IOREC(1) = INP(1)                                              INFUPC   183
                      IOREC(2) = INP(2)                                              INFUPC   184
                      NMSYS = INP(2)                                                 INFUPC   185
                      CALL WRITMS (2,IOREC,LENR,IXS,1)                               INFLPO   186
                      SSFLAG = -1                                                    INFUPC   187
                      GO TO 20                                                       INFUPC   188
                C        SUBSYSTEM CARD READ                                         INFLPC   189
                  100 CONTINUE                                                       INFLPC   190
                C                                                                    INFUPC   191
                C        INCREMENT SHIP COUNTER AND STORE SHIP'S NAME                INFLPC   192
                      ISHPCT = ISHPCT + 1                                            INFLPC   193
                      NOSUB = ISHPCT                                                 INFUPC   194
                      ICOMCT = 0                                                     INFLPC   195
                      NMSUB(1,ISHPCT) = INP(3)                                       INFLPC   196
                      NMSUB(2,ISHPCT) = INP(2)                                       INFUPC   197
                C***  REFORMAT THE "INP(2)" WORD INTO THE "NM" WORD FOR A LENGTH     INFLPC   198
                C***    OF 1 WORD, LEFT JUSTIFIED.                                   INFUPO   199
                      CALL REFMT ( INP(2), NM, 1, 1HL )                              INFUPC   200
                      SHIP = NM(1).AND.MASK                                          INFLPC   201
                      SSFLAG = 1                                                     INFLPC   202
                      GO TO 20                                                       INFUPC   203
```

```
C          COMPONENT CARD READ
  150 CONTINUE
C          FROM THIS POINT TO LABEL "3.0", PROCESS A "EQUI" RECORD
C              DURING SHIP CLASS DEFINITION
C
C          INCREMENT EQUIPMENT COUNTER AND STORE EQUIPMENT NAME
      ICOMCT = ICOMCT + 1
      NOCOMP(ISHPCT) = ICOMCT
C
      IF ( INP(2) .EQ. CHAR1 ) GO TO 160
      IF ( INP(3) .EQ. CHAR1 ) GO TO 170
C
  160 CONTINUE
C***  SET UP 1 OR 2 WORD READING TITLE FOR WBSOUT.
      NMCOMP(1,ICOMCT,ISHPCT) = INP(2)
      NMCOMP(2,ICOMCT,ISHPCT) = INP(3)
      GO TO 180
C
  170 CONTINUE
      NMCOMP(1,ICOMCT,ISHPCT) = INP(3)
      NMCOMP(2,ICOMCT,ISHPCT) = INP(2)
C
  180 CONTINUE
C          COMPRESS 1ST 6 LEFT JUSTIFIED CHARACTERS INTO UNIQUE
C              NAME FOR "SHIP"
      CALL REFMT ( NMCOMP(1,ICOMCT,ISHPCT), NM, 2, 1HL )
      EQUI = NM(1) .AND. MASK
      SSFLAG = 2
      GO TO 260
C          THRUPUT
  200 INC = 0
      GO TO 260
C          INPUT
  250 INC = 1
C***
C***  "SSFLAG" ASSUMES 3 VALUES PRIOR TO FIRST "$END" RECORD
C***    =       - 1  BETWEEN "SYST" AND 1ST "EQUI", "SHIP"
C***              (WHILE READING WBS ELEMENTS)
C***    =          1  EVERY TIME "SHIP" IS READ
C***    =          2  EVERY TIME "EQUI" IS READ
C***
  260 IF (SSFLAG.LT.1) GO TO 20
      IF( SSFLAG.EQ.1) EQUI = SHIP
C***  WHILE READING SYSTEM DEFINITION FOR EVERY NEW "EQUI" UNDER
C***      THIS "SHIP", ENTER A NEW UNIQUE TRIPLET IN THE "IREC" ARRAY.
C***  TRIPLET = (SHIP CLASS/EQUIPMENT/MASS STORAGE 3 INDEX)
      N = IREC(1)
C     (SHIP CLASS/EQUIPMENT) NOT FOUND - ADD
      N = N + 1
      IREC(1) = N
      IREC(N*3-1) = SHIP
      IREC(N*3) = EQUI
      IREC(N*3+1) = IXSSD + (N-1)*2
      CSTABLE(N*3-2) = SHIP
      CSTABLE(N*3-1) = EQUI
      I=N
      LOCAT = (I*3+1)
```

```
C  DECODE INP(7) AND FORM IPROCOD ARRAY.                                  INFUPD  261
C     INP(7) = PROCUREMENT MONEY (SCN, WPN, OR OPN)                        INFUPD  262
C  IPROCOD   = 2 FOR SCN                                                   INFUPD  263
C            = 3 FOR WPN                                                  INFUPD  264
C            = 4 FOR OPN                                                  INFUPD  265
C            = 0 FOR NO INP(7)                                            INFUPD  266
      INP7  = 3H                                                          INFUPD  267
      CALL MOVE(INP(7),1,INP7,1,3)                                        INFUPD  268
      IF(INP7.EQ.3H   ) ICOSCOD = 0                                       INFUPD  269
      IF(INP7.EQ.3HSCN) ICOSCOD = 2                                       INFUPD  270
      IF(INP7.EQ.3HWPN) ICOSCOD = 3                                       INFUPD  271
      IF(INP7.EQ.3HOPN) ICOSCOD = 4                                       INFUPD  272
      IPROCOD(N) = ICOSCOD                                                INFUPD  273
C                                                                         INFUPD  274
C DECODE & STORE THE C/S TABLE VALUES FROM "INP"(5) & "INP"(6).           INFUPD  275
C                                                                         INFUPD  276
      J5 = 0                                                              INFUPD  277
      CHAR2 = CHAR1                                                       INFUPD  278
C                                                                         INFUPD  279
C DO-LOOP 295 AND FOLLOWING CODE SCANS THE LEFTMOST (5) CHARACTERS        INFUPD  280
C OF INP(5) WORD, AND ENCODES ANY NON-BLANK ALPHANUMERIC INTEGER          INFUPD  281
C CHARACTERS FOUND THERE INTO A 5-DIGIT INTEGER, STORED (AS THIRD         INFUPD  282
C MEMBER OF A QUADRUPLET) IN CSTABLE ARRAY (I.E., TOTAL QUANTITY          INFUPD  283
C OF ANY EBS ELEMENT REQUIRED ON EACH UNIT OF A GIVEN SHIP CLASS          INFUPD  284
C FOR FULL OPERATIONAL CAPABILITY)                                        INFUPD  285
C                                                                         INFUPD  286
C***  ENTER A NEW QUADRUPLET IN "CSTABLE"/"CSTABEL"                       INFUPD  287
C***       (SHIP CLASS/EQUIPMENT DEPLOYMENT QTY) AND (ROTSE INV QTY)      INFUPD  288
      DO 295 II=1,5                                                       INFUPD  289
      CALL MOVE ( INP(5), II, CHAR2, 1, 1 )                               INFUPD  290
      IF ( CHAR2 .EQ. 1H  ) GO TO 295                                     INFUPD  291
      J5 = J5 + 1                                                         INFUPD  292
      CALL MOVE (CHAR2,1,SAVE,J5,1)                                       INFUPD  293
  295 CONTINUE                                                            INFUPD  294
C                                                                         INFUPD  295
      IF (J5.NE.0) GO TO 296                                              INFUPD  296
      CSTABLE(I*3) = 0                                                    INFUPD  297
      GO TO 297                                                           INFUPD  298
C                                                                         INFUPD  299
  296 CONTINUE                                                            INFUPD  300
C                                                                         INFUPD  301
      ENCODE (4,376,FMT) J5                                               INFUPD  302
      DECODE (J5,FMT,SAVE) CSTABLE(I*3)                                   INFUPD  303
C                                                                         INFUPD  304
C DO-LOOP 298 AND FOLLOWING CODE IS SIMILAR TO PRECEDING CODE;            INFUPD  305
C THE 9-CHARACTER REAL NUMBER FROM "INP"(6), STORED AS THE 4TH MEMBER     INFUPD  306
C OF A QUADRUPLET IN THE "CSTABEL" ARRAY IS (THAT QUANTITY OR FRACTION    INFUPD  307
C OF ANY EBS ELEMENT WHICH MUST BE BOTH MANUFACTURED AND INSTALLED        INFUPD  308
C ON EACH UNIT OF A GIVEN SHIP CLASS)                                     INFUPD  309
C                                                                         INFUPD  310
  297 CONTINUE                                                            INFUPD  311
      J6 = 0                                                              INFUPD  312
      J7 = 0                                                              INFUPD  313
      J8 = 0                                                              INFUPD  314
      IPOINT = 0                                                          INFUPD  315
      CHAR2 = CHAR1                                                       INFUPD  316
      DO 298 II=1,9                                                       INFUPD  317
```

```
      CALL MOVE (INP(6),II,CHAR2,1,1)
      IF (CHAR2.EQ.1H ) GO TO 298
      IF (CHAR2.EQ.1H.) IPOINT = IPOINT + 1
      J8 = J8 + 1
      IF (IPOINT.EQ.0) J6 = J6 + 1
      IF (IPOINT.EQ.1 .AND. (J8-J6).GT.1) J7 = J7 + 1
      CALL MOVE (CHAR2,1,SAVE,J8,1)
  298 CONTINUE
      IF (J8.NE.0) GO TO 299
      CSTABEL(I) = 0.
      GO TO 20
  299 CONTINUE
      IF (IPOINT.EQ.0) J8 = J8 + 1
C
C STOP 31 PREVENTS ABORT ON "FORMAT 377" OR "FMTR" FROM A TOO-LONG NBR
C IF STOP 31 EVER OCCURS, REVIEW INPUT, AND SHORTEN COMPONENT COUNT(S)
C   IN SECOND COLUMN (OF SYSTEM DESCRIPTION) TO 9 OR FEWER CHARACTERS!
C NOTE: THE CHARACTER COUNT INCLUDES NUMBERS TO LEFT OR RIGHT OF DECIMAL
C       POINT AND THE DECIMAL POINT; IF YOU HAVE A 9-DIGIT INTEGER
C       (PERISH FORBID & HEAVEN FORBID!) THE PROGRAM LOGIC WILL SUPPLY
C       THE UNDERSTOOD DECIMAL POINT, INCREASING THE CHARACTER COUNT
C       TO 10, AND CAUSING A STOP 31 CONDITION --- REDUCE TO 8-DIGITS!
C
      IF (J8.GT.9) STOP "INPUT NUMBER TOO LONG; SEE NOTE AT INPUPD 299"
      IF (IPOINT.EQ.0) CALL MOVE (MYCOT,1,SAVE,J8,1)
      ENCODE (6,377,FMTR) J8,J7
      DECODE (J8,FMTR,SAVE) CSTABEL(I)
      GO TO 20
C        DATA CARD READ
C***
C***  "NTYPE" = INDICATOR DURING SCAN OF 1ST 20 CHAR OF DETAIL
C***            DATA CARD
C***    = 0  ONLY BLANKS SO FAR, OR JUST STARTING SCAN
C***    = 1  JUST SCANNED 1ST LEFT PAREN (PRESUMES SINGLE WBS EL)
C***    = 2  JUST SCANNED FIRST DASH (PRESUMES MULTIPLE WBS EL'S
  300 J=0
      NTYPE = 0
      DO 350 I=1,20
      CALL MOVE (INP,I,CHAR,1,1)
      IF (NTYPE.GT.0) GO TO 310
      IF (CHAR.EQ.1H( ) NTYPE = 1
      GO TO 330
  310 IF (CHAR.EQ.1H ) GO TO 350
      IF (CHAR.GE.1H0.AND.CHAR.LE.1H9) GO TO 340
      IF (CHAR.NE.1H-) GO TO 320
      IF (NTYPE.GE.2) GO TO 360
C***  "LOC" = POSITION IN J-COUNT OF DASH.
      LOC = J+1
      NTYPE = 2
      GO TO 340
  320 IF (CHAR.EQ.1H) ) GO TO 370
      GO TO 360
C***  "J" = COUNT OF LEGIT CHAR'S.  (ANY DIGIT OR DASH)
  340 J = J+1
      CALL MOVE (CHAR,1,SAVE,J,1)
  350 CONTINUE
C        OUTPUT ERROR MESSAGE
```

```
  360 WRITE (6,31) INP
      WRITE(6,361)
  361 FORMAT (5X, 26HPRECEDING CARD IS IN ERROR )
      GO TO 20
C
C TEST FOR A "DASH" NOT FOLLOWED BY A SECOND SUBSCRIPT
C
  370 CONTINUE
      IF ((J - LOC).EQ.0 .AND. NTYPE.EQ.2) GO TO 372
      IF (NTYPE.EQ.2) GO TO 380
      GO TO 374
C
C DECREMENT "J" & CHANGE "NTYPE" FOR DASH NOT FOLLOWED BY 2ND SUBSCRIPT
C
  372 CONTINUE
      J = J - 1
      NTYPE = 1
C        SINGLE SUBSCRIPT
  374 CONTINUE
      NUM = 1
      ENCODE (4,376,FMT) J
C***  PICK OFF WBS ELEMENTS IN FIRST 10 CHAR'S.
  376 FORMAT (2H(I,I1,1H) )
  377 FORMAT (2H(F,I1,1H.,I1,1H))
      DECODE (J,FMT,SAVE) ISUBF
      GO TO 390
C        SUBSCRIPT RANGE
  380 NO2 = J-LOC
      NO1 = J-NO2-1
      ENCODE (10,385,FMT) NO1,NO2
  385 FORMAT (2H(I,I1,5H,1X,I,I1,1H) )
      DECODE (J,FMT,SAVE) ISUBF, ISUBL
      NUM = ISUBL-ISUBF+1
  390 IF (SSF(AG.LT.0) GO TO 415
C     UPDATE SHIP CLASS/EQUIPMENT FILE RECORD
C***  WORKING WITH "TPUT" COST LINE.
C***  STORES UP TO 6 WBS EL'S.  STORES "TPUT" COSTS ON MS 2 (A/N)
C***    AT INDEX = 18,20,22,ETC OR STORES "NPUT" AT INDEX = 19,
C***    21,23,ETC.
      INDEX = LOCAT + INC
      CALL READMS (2,IOREC,LENR,INDEX)
      DO 410 I=1,NUM
      IOREC(ISUBF+I-1) = INP(I+2)
  410 CONTINUE
      CALL WRITMS (2,IOREC,LENR,INDEX,1)
      GO TO 20
C        UPDATE WBS OR SYSTEM DATA
C***  WORKING WITH A WBS EL "TPUT" PRIOR TO FIRST "$END" OR
C***     A "TPUT" COST LINE OF AN EQUIPMENT
  415 IF (INC.EQ.1) GO TO 430
      INDEX = 1XWBS + (ISUBF-1)/(LENR/5)
      CALL READMS (2,IOREC,LENR,INDEX)
      ISUBL = MOD(ISUBF*5-4,LENR)
C***  WRITING "APPROP CODE", "EL NAMES", AND ELEMENT NO. ON MS2.
      DO 420 I=1,5
  421 IOREC(ISUBL+I-1) = INP(2+I)
      CALL WRITMS (2,IOREC,LENR,INDEX,1)
```

```
C
C
C                 DECODE ROLL-UP VALUE
      J = 0
      CHAR2 = CHAR1
      DO 425 II=1,2
      CALL MOVE ( INP(8), II, CHAR2, 1, 1 )
      IF ( CHAR2 .EQ. 1H  ) GO TO 425
      J = J + 1
      CALL MOVE ( CHAR2, 1, SAVE, J, 1 )
  425 CONTINUE
C
      ENCODE ( 4, 376, FMT ) J
      DECODE ( J, FMT, SAVE ) IROLL(ISUBF)
C
      GO TO 20
  430 INDEX = IXSD + (ISUBF-1)/LENR
      CALL READMS (2,IOREC,LENR,INDEX)
      CALL READMS (2,IOREC(LENR+1),LENR,INDEX+1)
      DO 440 I=1,NUM
      NOX = MOD(ISUBF-1,LENR)
  440 IOREC(NOX+I) = INP(I+2)
      CALL WRITMS (2,IOREC,LENR,INDEX,1)
      CALL WRITMS (2,IOREC(LENR+1),LENR,INDEX+1,1)
      GO TO 20
C
C************ END OF THE SYSTEM, WBS, EQUIPMENT NAME INPUT ************
C
  500 CONTINUE
C
C INITIALIZE MASS STORAGE FILES 9 & 10 IN TWO DO-LOOPS.
C NOTE: MS9 & MS10 EACH HAS A LOW END FROM 1 THROUGH 1247 (43 X 29);
C          AND MS10 HAS A HIGH END     FROM 1251 THROUGH LENF10.
C LOW END OF MS 9 HOLDS UP TO 1247 "TOTC" ARRAYS FROM "BUDGET" SUBRTN,
C   = SUMMARY TOTAL ARRAY OF 10 COSTS OVER ALL APPROPRIATIONS CODES
C     FOR THIS "EQUI" ON THE "SHIP"
C LOW END OF MS10 HOLDS UP TO 1247 "ROW"  ARRAYS FROM "SLCOM" RTN,
C   = TOTAL COSTS VERSUS WBS OF UP TO 29 "EQUI'S" ON EACH OF
C     UP TO 43 "SHIP";
C HIGH END OF MS10 HOLDS UP TO  43 "TOT" ARRAYS FROM "WBSOUT(1)" SUBRTN,
C   = CROSS-FOOT ARRAY VERSUS WBS OF ALL "EQUI" COSTS
C     ON A UNIT SHIP OF THIS CLASS.
C
      DO 506 L1=1,LENR
      IOREC(L1) = 0
  506 CONTINUE
      L3 = IREC(1)
      DO 507 L2=1,L3
      CALL WRITMS (9,IOREC,LENR9,L2,-1)
      CALL WRITMS (10,IOREC,LENR,L2,-1)
  507 CONTINUE
      DO 508 L4=INDXTOT,LENF10
      CALL WRITMS (10,IOREC,LENR,L4,-1)
  508 CONTINUE
C
C                 START COMPONENT DEFINITION INPUT, TPUT, NPUT, CER
C***  SET "ISFFLG" TO 1 AFTER 1ST "$END" SO CONTROL WILL BRANCH
```

```
      SUBROUTINE INPUPD     74/74   OPT=2                FTN 4.6+433        07/31/79  23.53.41

C***   HERE IMMEDIATELY AFTER STATEMENT "26".                                INPUPC    489
      ISPFLG = 1                                                            INPUPC    490
C                                                                           INPUPC    491
C                                                                           INPUPC    492
C     READ IN EQUIPMENT DEFINITION DATA                                     INPUPC    493
  910 CONTINUE                                                              INPUPC    494
      READ (5,25) INP                                                       INPUPC    495
      IF ( ECF(5)) 800, 920                                                 INPUPC    496
C                                                                           INPUPC    497
  920 CONTINUE                                                              INPUPC    498
      WRITE (6,31) INP                                                      INPUPD    499
C                                                                           INPUPC    500
C               DETERMINE THE FIRST 4 CHARACTERS OF INP(1)                  INPUPC    501
      CALL MOVE ( INP(1), 1, CHAR, 1, 4 )                                   INPUPC    502
      IF ( CHAR .EQ. 4HINPUT ) GO TO 970                                    INPUPC    503
      IF ( CHAR .EQ. 4HITPUT ) GO TO 960                                    INPUPD    504
      IF ( CHAR.EQ. 4HEQUI) GO TO 950                                       INPUPC    505
      IF ( CHAR .EQ. 4H$END ) GO TO 1020                                    INPUPC    506
      IF ( CHAR .EQ. 4HCER  ) GO TO 980                                     INPUPC    507
      CALL MOVE ( CHAR, 8, CHAR, 2, 3 )                                     INPUPC    508
      IF ( CHAR .EQ. 1H* ) GO TO 910                                        INPUPC    509
      IF ( CHAR .EQ. 1H$ ) GO TO 910                                        INPUPC    510
      GO TO 30)                                                             INPUPC    511
C                                                                           INPUPC    512
C                                                                           INPUPD    513
C        COMES HERE ON "EQUI"                                               INPUPC    514
  950 CONTINUE                                                              INPUPC    515
C                                                                           INPUPC    516
C        COUNTER OF TOTAL NO. OF DIFFERENT EQUIPMENT DEFINITION             INPUPD    517
C          DATA INPUT                                                       INPUPC    518
      ICCTR = ICCTR + 1                                                     INPUPC    519
C                                                                           INPUPC    520
C        DEFINE THIS EQUIPMENT                                              INPUPC    521
C***  COMPRESS 1ST 6 LEFT JUST CHARACTER'S AS UNIQUE NAME OF "EQUI"         INPUPC    522
      CALL REFPT ( INP(2), NM, 2, 1HL )                                     INPUPC    523
      EQUI = NM(1) .AND. MASK                                               INPUPC    524
C                                                                           INPUPC    525
C     DEFINE A LOCATION OR INDEX FOR STORAGE OF THIS EQUIPMENT              INPUPC    526
C                                                                           INPUPC    527
C      LOCAT          - MASS STORAGE 3 INDEX (18,20,22,ETC)                INPUPC    528
      LOCAT = IXSSD + (ICCTR - 1) * 2                                       INPUPC    529
C                                                                           INPUPC    530
C               INCREMENT INDEX FOR CER STORAGE                             INPUPC    531
      INDCER = INDCER + LENCER                                              INPUPC    532
C     "ICER" ARRAY IS THE TEMPORARY STORAGE FOR THE INDICES OF THE          INPUPC    533
C CER DATA FOR EACH EQUIPMENT.                                              INPUPC    534
C      INDCER         - MASS STORAGE 6 INDEX (1,10,19,ETC)                 INPUPC    535
C                                                                           INPUPC    536
C     FILL "CER" TRIPLET WITH: EQUI/MS-6 INDEX/MS-3(MS-2) INDEX             INPUPD    537
      ISUBCER = ISUBCER + 1                                                 INPUPC    538
      ICER(ISUBCER) = EQUI                                                  INPUPC    539
      ISUBCER = ISUBCER + 1                                                 INPUPC    540
      ICER(ISUBCER) = INDCER                                                INPUPC    541
      ISUBCER = ISUBCER + 1                                                 INPUPC    542
      ICER(ISUBCER) = LOCAT                                                 INPUPD    543
C***  SAVE 7 PLUS 7 CHAR'S AS "EQUI" NAME.                                  INPUPC    544
      NAMESC(ICCTR,1) = INP(2) .AND. MASK7                                  INPUPC    545
```

```
      NAMESC(ICCTR,2) = INP(3) .AND. MASK7
      IF (INP(3).EQ.10H          ) GO TO 955
      GO TO 910
  955 NAMESC(ICCTR,2) = NAMESC(ICCTR,1)
      NAMESC(ICCTR,1) = 10H
      GO TO 910
C
C                 THE INPUT VALUES ARE TPUT VALUES
  960 CONTINUE
      INC = 0
      GO TO 910
C
C                 THE INPUT VALUES ARE NPUT VALUES
  970 CONTINUE
      INC = 1
      GO TO 910
C
C                 THE INPUT VALUES ARE CER VALUES
  980 CONTINUE
C
C                 INITIALIZE CER INPUT COUNT CONTROL
      CERCT = 0
C
  981 CONTINUE
      READ (5,983) CEREND,EFORSI,ROWID,ADDID,CERNO,XREFNO,XREFAD,
     C             (FS(II),PS(II),II=1,6)
  983 FORMAT (A5,A1,I3,I1,I5,I4,I1,6(A1,F9.0))
      IF ( CEREND .EQ. 5HECER  ) GO TO 985
      WRITE (1,9823) CEREND,EFORSI,ROWID,ADDID,CERNO,XREFNO,XREFAD,
     C               (FS(I),PS(I),I=1,6)
 9823 FORMAT (10X,A5,A1,I3,I1,I5,I4,I1,6(1X,A1,F13.6))
      CERCT = CERCT + 1
      IFORC(CERCT) = EFORSI
      IROWID(CERCT) = ROWID
      IADD(CERCT) = ADDID
      ICERNO(CERCT) = CERNO
      IXREFNO(CERCT) = XREFNO
      IXREFAD(CERCT) = XREFAD
      DO 984 I=1,6
      IFSTORE(I,CERCT) = FS(I)
      PSSTORE(I,CERCT) = PS(I)
  984 CONTINUE
      GO TO 981
C
  985 CONTINUE
      WRITE (6,986) CEREND
  986 FORMAT ( 10X, A5 )
      CERCTX6 = CERCT * 6
C     STORE "CER" DATA FOR THIS "EQUIP" ON MS 8 AT INDEX "INDCER"
      CALL WRITMS (8,CERCT  ,1       ,INDCER  ,1)
      CALL WRITMS (8,IFORC  ,CERCT   ,INDCER+1,1)
      CALL WRITMS (8,IROWID ,CERCT   ,INDCER+2,1)
      CALL WRITMS (8,IADD   ,CERCT   ,INDCER+3,1)
      CALL WRITMS (8,ICERNO ,CERCT   ,INDCER+4,1)
      CALL WRITMS (8,IXREFNO,CERCT   ,INDCER+5,1)
      CALL WRITMS (8,IXREFAD,CERCT   ,INDCER+6,1)
      CALL WRITMS (8,IFSTORE,CERCTX6,INDCER+7,1)
```

```
      CALL WRITMS (6,PSSTORE,CEPCTX6,INDCER+8,1)
      GO TO 910
C
C                END OF THE EQUIPMENT DEFINITION DATA
C
 1020 CONTINUE
C
C     STORAGE OF EQUIPMENT TPUT/NPUT INDEX INTO THE "IREC" ARRAY
      N = IREC(1) * 3
      DO 1030 J=1,ISUBCER,3
      EQUI = ICER(J)
      LOCAT = ICER(J+2)
      DO 1025 I=3,N,3
      IF(EQUI.NE.IREC(I)) GO TO 1025
      IREC(I+1) = LOCAT
 1025 CONTINUE
 1030 CONTINUE
C
      CALL WRITMS ( 2, IREC, LENR17, IXSS, 1 )
C
  501 FORMAT ( 20I3 )
 5011 FORMAT ( 10X, 20I3 )
C
C                INPUT THE CHART GENERATION CONTROLS
      READ (5,25) INP
      WRITE (6,31) INP
      READ (5,501) CHRTCNT
      WRITE (6,5011) CHRTCNT
C
C                INPUT TITLE AND SHIP INSTALLATION SCHEDULE
      READ (5,25) INP
      WRITE (6,31) INP
C
      READ(5,5012) NOYRS,IYEARS
      IYRS = NOYRS + 1
 5012 FORMAT(I5,6X,12I5)
      WRITE(6,5013) NOYRS,(IYEARS(K),K=1,NOYRS)
 5013 FORMAT(10X,I4,* YEARS:*,12I5)
      DO 502 I=1,NUSTB
      READ(5,503) (SINSTB(I,K),K=1,IYRS)
      WRITE(6,504) (SINSTB(I,K), K=1,IYRS)
  503 FORMAT(A6,4X,12I5)
  504 FORMAT(10X,A6,4X,12I5)
      SNAME = SINSTB(I,1) .AND. MASK
      SINSTB(I,1) = SNAME
  502 CONTINUE
      READ(5,25) INP
      WRITE(6,31) INP
  601 FORMAT(16I5)
  602 FORMAT(10X,16I5)
      READ(5,601) NOFLY
      WRITE(6,602) NOFLY
      READ (5,601) (IFLYROW(K), K=1,NOFLY)
      WRITE (6,602) (IFLYROW(K), K=1,NOFLY)
C  READ IN FIVE LINES OF FOOTNOTES FOR OUTPUT  CHARTS
      DO 60 M=1,5
      READ(5,25) (FNOTES(M,L),L=1,12)
```

```
      WRITE(6,604) (FNOTES(M,L),L=1,12)
   60 CONTINUE
  604 FORMAT(10X,12A10)
C        BUILD WORKING FILE(3)
      DO 505 I=1,LENR
  505 IOREC(I) = 0
      CHAR = 10H
C
C DO-LOOP 510 INITIALIZES "LENF" (100) RECORDS ON MS3 TO ZERO
C
      DO 510 I=1,LENF
  510 CALL WRITMS (3,IOREC,LENR,I,-1)
  520 INDEX = IXWBS
      INDX3 = 1
      NREC = LWBS
      IGOTO = 3
      GO TO 600
  530 INDEX = IXSD
      INDX3 = LWBS + 1
      NREC = LSD
      IGOTO = 3
      GO TO 600
  540 CALL READMS ( 2, IREC, LENR17, IXSS )
      IGOTO = 4
      NCER = 3
      NREC = 1
      IC = 0
  550 CONTINUE
      IC = IC + 1
      IF ( IC .GT. ICCTR ) GO TO 700
      INDEX = ICER(NCER)
      INDX3 = INDEX
      NCER = NCER + 3
C
C DO-LOOP 660 AND INCLUDED (NESTED) DO-LOOPS:
C              - READS "AS IS" INPUT RECORDS FROM MS2
C              - TRANSLATES "AS IS" INTO "F-NOTATION" (F1.0 --- F10.0)
C                ACCORDING TO THE NUMBER OF SIGNIFICANT CHARACTERS
C                (SUM OF DIGITS + DECIMAL POINT + (MINUS))
C              - WRITES "F-NOTATION" DATA ("IOREC") ON MS3
C
  600 CONTINUE
      DO 660 L=1,NREC
      CALL READMS (2,IOREC,LENR,INDEX+L-1)
      DO 650 J=1,LENR
      IPER = 0
      IBK = 0
      INEG = 0
      NUM = 0
      DO 630 K=1,10
      CALL MOVE (IOREC(J),K,CHAR,1,1)
      IF (CHAR.NE.1H ) GO TO 610
      IBK = IBK + 1
      GO TO  630
  610 IF (CHAR.NE.1H.) GO TO 615
      IF (IPER.NE.0) GO TO 650
      IPER = 1
```

```
      GO TO 625                                                         INFUPD   717
  615 IF (CHAR.NE.1H-) GO TO 620                                        INFUPD   718
      IF (INEG.NE.0) GO TO 650                                          INFUPD   719
      INEG = 1                                                          INFUPD   720
      GO TO 625                                                         INFUPD   721
  620 IF (CHAR.LT.1H0.OR.CHAR.GT.1H9) GO TO 650                         INFUPD   722
  625 NUM = NUM + 1                                                     INFUPD   723
      CALL MOVE (CHAR,1,SAVE,NUM,1)                                     INFUPD   724
  630 CONTINUE                                                          INFUPD   725
      IF (IBK .EQ. 10) GO TO 645                                        INFUPD   726
      ENCODE (7,640,FMT) NUM                                            INFUPD   727
  640 FORMAT (2H(F,I2,3H.0))                                            INFUPD   728
      DECODE (NUM,FMT,SAVE) IOREC(J)                                    INFUPD   729
      GO TO 650                                                         INFUPD   730
  645 IOREC(J) = 0                                                      INFUPD   731
  650 CONTINUE                                                          INFUPD   732
  660 CALL WRITMS (3,IOREC,LENR,INDX3+L-1,1)                            INFUPD   733
      GO TO (520, 530, 540, 550), IGOTO                                 INFUPD   734
  700 CONTINUE                                                          INFUPD   735
C                                                                       INFUPD   736
C                 SETUP THE IWORD ARRAY CONTAINING APPRO. CODE,         INFUPD   737
C            WES ELEMENT DEFINITION AND EQUATION NUMBER.                INFUPD   738
      CALL AFCELM                                                       INFUPD   739
      RETURN                                                            INFUPD   740
  800 CONTINUE                                                          INFUPD   741
      STOP "UNEXPECTED EOF AS INFUPD SUBRTN READS DATA INPUT FILE"      INFUPD   742
      END                                                               INFUPD   743
```

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SUBROUTINE WBSOUT     74/74   OPT=2                    FTN 4.6+433        07/31/79  23.53.41

 1                SUBROUTINE WBSOUT (ICALL)                                    WBSOUT      2
                  C       GENERAL TITLE TO BE USED ON ALL CHARTS               GENTLE      2
                  COMMON / GENTLE  /  TITLE(3)                                 GENTLE      3
                  INTEGER TITLE                                                GENTLE      4
                  C                                                            NPUT        2
                  C************************** NPUT COMMON ***************************  NPUT        3
                  C                                                            NPUT        4
                  C VARIOUS OTHER ARRAYS ARE EQUIVALENCED TO THE "ARAY" ARRAY AS IN    NPUT        5
                  C                                                            NPUT        6
                  C  - SLCOM  : ROW   = ARAY(1,1)                              NPUT        7
                  C  - BUDGET : CG    = ARAY(1,2)                              NPUT        8
                  C  - INPUPC : IOREC = ARAY(1,1)                              NPUT        9
                  C  - COMPCMP: ROW   = ARAY(1,1)                              NPUT       10
                  C  - APCELM : IRAY  = ARAY(1,1)                              NPUT       11
                  C                                                            NPUT       12
                       COMMON / NPUT    /  ARAY(150,2)                         NPUT       13
                  C                                                            NPUT       14
                  C                                                            MS2         2
                  C************** MS (LENGTH AND COUNTER) COMMON *****************  MS2         3
                  C                                                            MS2         4
                  C                                                            MS2         5
                  C      LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH  MS2         6
                  C                        (TYPICALLY 150)                     MS2         7
                  C      NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)  MS2         8
                  C      ICCTR           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT    MS2         9
                  C                        ELEMENTS TABLE                      MS2        10
                  C      L150            - (150 WORDS) RECORD LENGTH OF 7 ARRAYS    MS2        11
                  C                        IN THE "CERVLS" COMMON              MS2        12
                  C      L900            - (900 WORDS) RECORD LENGTH OF 2 ARRAYS    MS2        13
                  C                        IN THE "CERVLS" COMMON              MS2        14
                  C                                                            MS2        15
                       COMMON / MS2 / LENR,NWBS,ICCTR,L150,L190                MS2        16
                  C                                                            MS2        17
                  C                                                            MS2        18
                  C                                                            MS2        19
                  C                                                            SYST        2
                  C ********************** NAMES COMMON ************************  SYST        3
                  C                                                            SYST        4
                  C      NMSYS           - NAME OF THE SYSTEM                  SYST        5
                  C      NOSUB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED   SYST        6
                  C      NMSUB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS  SYST        7
                  C      NOCOMP( )       - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)  SYST        8
                  C                        (RUNNING TOTAL FOR EQUIPMENTS)      SYST        9
                  C      NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES  SYST       10
                  C                        IN WBSOUT (INDEXED BY EQUIPMENT NUMBER  SYST       11
                  C                        AND SHIPCLASS NUMBER)               SYST       12
                  C      NAMESC( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)  SYST       13
                  C                        FOR EQUIPMENT QUANTITIES TABLE - FLEET  SYST       14
                  C                        SUMMARY                             SYST       15
                  C      EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)  SYST       16
                  C      SHIPNM          - PRESENT SHIPCLASS (BEING PROCESSED)  SYST       17
                  C                                                            SYST       18
                  C                                                            SYST       19
                       COMMON / NAMES   /  NMSYS, NOSUB, NMSUB(2,43), NOCOMP(43),  SYST       20
                      1         NMCOMP(2,100,43),NAMESC(14,2),EQUI,SHIPNM      SYST       21
                       INTEGER EQUI,SHIPNM                                     SYST       22
                  C ****************MISC (MISCELLANEOUS) COMMON ******************  SYST       23
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```
C                                                                       SYST    24
C       NAP             - COUNT OF DIFFERENT APPROPRIATION CODES        SYST    25
C       APPRO( )        - APPROPRIATION CODE NAMES                      SYST    26
C       SPCL( , )       - PERCENTAGES FOR CBS ELEMENT COST SPLITS       SYST    27
C       NPH             - COUNT OF THE LIFE CYCLE PHASES                SYST    28
C       IPH( )          - FIRST CBS ELEMENT NUMBER OF EACH PHASE        SYST    29
C       IPB( )          - CBS ELEMENT NUMBER FOR PAGE BREAKS            SYST    30
C                         (LAST CBS NUMBER FOR THE PAGE)                SYST    31
C       IPHASE( , )     - TITLES OF CBS PHASES                          SYST    32
C       FLEETZ          - FLEET (SYSTEM) SIZE                           SYST    33
C       NROLL( )        - LOWEST COST ELEMENT LEVEL TO BE PRINTED       SYST    34
C                         (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)   SYST    35
C       ROTOT           - TOTAL ROTBE COST                              SYST    36
C       TOTINV          - TOTAL INVESTMENT COST MINUS TOTAL RIFOUT      SYST    37
C       TOTRIF          - TOTAL RIFOUT COST                             SYST    38
C       SMISRC          - MISSILE ROTBE COST                            SYST    39
C       NOFLY           - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN      SYST    40
C                         FLYAWAY COSTS                                 SYST    41
C       IFLYROW( )      - CBS ELEMENT NUMBER FOR FLYAWAY COSTS          SYST    42
C       NOYRS           - NUMBER OF YEARS IN SHIP INSTALLATION TABLE    SYST    43
C       IYEARS          - YEARS COVERED BY THE SHIP INSTALLATION TABLE  SYST    44
C       IYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE    SYST    45
C                         PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE) SYST  46
C       FNOTES( , )     - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS    SYST    47
C                                                                       SYST    48
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),       SYST    49
     1          IPHASE(2,4),FLEETZ,NROLL(4),ROTOT,TOTINV,TOTRIP,       SYST    50
     2          SMISRD,NOFLY,IFLYROW(25),NOYRS,IYEARS(12),IYRS,        SYST    51
     3          FNOTES(5,12)                                           SYST    52
      INTEGER APPRO,SPCL,FLEETZ                                         SYST    53
C                                                                       SYST    54
C                                                                       SHIFINS  2
C ********** MARRAY (IREC ARRAY) COMMON ********************            SHIFINS  3
C                                                                       SHIFINS  4
C                                                                       SHIFINS  5
C     THE IREC ARRAY IS A SINGLY-SUBSCRIPTED ARRAY WHOSE FIRST POSITION SHIFINS  6
C IS THE TOTAL NUMBER OF UNIQUE SHIPCLASS/EQUIPMENT COMBINATIONS.       SHIFINS  7
C THE NEXT THREE POSITIONS START A SERIES OF TRIPLETS WHOSE             SHIFINS  8
C MEMBERS ARE: SHIPCLASS NAME, EQUIPMENT NAME, MS 3 INDEX.              SHIFINS  9
C       IREC(1)         - THE RUNNING SUM OF THE TOTAL NUMBER OF UNIQUE  SHIFINS 10
C                         SHIPCLASS/EQUIPMENT COMBINATION IN THE        SHIPINS 11
C                         EQUIPMENT LEVEL INPUT                         SHIFINS 12
C       IREC(2,5,8,     - THE NAME OF THE SHIP CLASS                    SHIFINS 13
C            11,ETC)                                                    SHIFINS 14
C       IREC(3,6,9      - THE NAME OF THE EQUIPMENT                     SHIPINS 15
C            12,ETC)                                                    SHIFINS 16
C       IREC(4,7,10     - INDEX FOR MASS STORAGE UNIT 3.  AN INTEGER    SHIFINS 17
C            13,ETC)      NUMBER BEGINNING A 18 AND INCREMENTING BY     SHIFINS 18
C                         2 TO FORM 18,20,22,24,ETC.  THIS INDEX IS     SHIPINS 19
C                         THE STARTING LOCATION OF A RECORD (LENGTH      SHIFINS 20
C                         "NWBS WORDS") ON MASS STORAGE 3 WHICH         SHIFINS 21
C                         CONTAINS THE UNIT COSTS OF THE EQUIPMENTS     SHIFINS 22
C                         ON A UNIT SHIP (COMPUTED BY SUBROUTINE        SHIFINS 23
C                         COMPCMP).                                     SHIFINS 24
C                                                                       SHIFINS 25
      COMMON / MARRAY / IREC(3750)                                      SHIFINS 26
C                                                                       SHIFINS 27
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115          C **** SHIPINS (SHIP SUMMATION AND INSTALLATION TABLE) COMMON *****      SHIPINS    28
             C                                                                        SHIPINS    29
             C      SHIPSUM( )      - CONTAINS THE TOTAL NUMBER OF UNIT SHIPS FOR     SHIPINS    30
             C                        EACH SHIP CLASS FOUND BY INSPECTION OF          SHIPINS    31
             C                        THE SHIP INSTALLATION TABLE                     SHIPINS    32
120          C      SINSTB( , )     - THE SHIP DEPLOYMENT/INSTALLATION SCHEDULE       SHIPINS    33
             C                        TABLE. FOR EACH SHIP CLASS:                     SHIPINS    34
             C                           SINSTB(X,1)   - SHIP CLASS NAME              SHIPINS    35
             C                           SINSTB(X,2-7) - THE YEARLY NUMBERS OF        SHIPINS    36
             C                                 UNIT SHIPS OF THIS CLASS TO BE         SHIPINS    37
125          C                                 DEPLOYED/INSTALLED                     SHIPINS    38
             C      SHIPSM( )       - THE TOTAL NUMBER OF UNIT SHIPS FOR EACH         SHIPINS    39
             C                        SHIP CLASS.  IT IS THE SAME COUNT AS            SHIPINS    40
             C                        SHIPSUM, HOWEVER, IT IS DEFINED IN A            SHIPINS    41
             C                        SPECIFIC ORDER AFTER ERROR-CHECKING IN          SHIPINS    42
130          C                        SLOOM'S NESTED DO-LOOPS WHICH                   SHIPINS    43
             C                        DETERMINE THE TOTAL COSTS BY SHIP CLASS         SHIPINS    44
             C                                                                        SHIPINS    45
                  COMMON / SHIPINS / SHIPSUM(43), SINSTB(43,7), SHIPSM(43)           SHIPINS    46
                  INTEGER SHIPSUM, SINSTB, SHIPSM                                    SHIPINS    47
135          C ********** CSTAB (EQUIPMENT QUANTITIES) COMMON ****************        CSTAB      2
             C                                                                        CSTAB      3
             C      QCMPT           - QUANTITY OF EQUIPMENT ALREADY DEPLOYED          CSTAB      4
             C                        (O & S ) OVER ALL SHIPCLASSES (Q1) (INTEGER)    CSTAB      5
             C      QCMPT2          - QUANTITY OF EQUIPMENT TO BE MANUFACTURER        CSTAB      6
140          C                        INSTALLED (INVESTMENT) OVER ALL SHIPCLASSES     CSTAB      7
             C                        (Q2) (REAL)                                     CSTAB      8
             C      CSTABLE         - SINGLY-DIMENSIONED ARRAY WHOSE MEMBERS ARE      CSTAB      9
             C                        A SERIES OF:                                    CSTAB     10
             C                              --SHIPCLASS NAME                          CSTAB     11
145          C                              --O & S QUANTITY OF EQUIPMENT FOR EACH    CSTAB     12
             C                                SHIP ON A PARTICULAR SHIPCLASS          CSTAB     13
             C                              --INV QUANTITY OF EQUIPMENT FOR EACH      CSTAB     14
             C                                SHIP ON A PARTICULAR SHIPCLASS          CSTAB     15
             C                        (THESE THREE MEMBERS ARE GIVEN FOR EACH         CSTAB     16
150          C                         SHIP CLASS MAKING A SERIES OF DATA TRIPLETS)    CSTAB     17
             C                        (VALUES ARE INTEGER)                            CSTAB     18
             C      CSTABEL         - SINGLY-DIMENSIONED ARRAY OF THE INVESTMENT      CSTAB     19
             C                        QUANTITY OF EQUIPMENT FOR EACH SHIP ON A        CSTAB     20
             C                        PARTICULAR SHIPCLASS. DATA ELEMENTS MUST        CSTAB     21
155          C                        BE STORED IN THE SAME SHIPCLASS ORDER AS        CSTAB     22
             C                        CSTABLE.  THE TWO ARRAYS MAY BE THOUGHT         CSTAB     23
             C                        OF AS A SERIES OF DATA QUADRUPLETS.             CSTAB     24
             C                                                                        CSTAB     25
             C                                                                        CSTAB     26
160               COMMON /CSTAB/QCMPT(100),QCMPT2(101),CSTABLE(3750),CSTABEL(1250)   CSTAB     27
                  INTEGER QCMPT,CSTABLE                                              CSTAB     28
             C       ARRAY CONTAINING APPRO CODE, LBS NUMBER, COST ELEMENT ID        APELOUT    2
                  COMMON / APELOUT /  IWORD(15),E)                                   APELOUT    3
             C                                                                        CHARTS     2
165          C ********************CHARTS (CONTROL) COMMON ********************      CHARTS     3
             C                                                                        CHARTS     4
             C                                                                        CHARTS     5
             C      CHRTCNT CONTAINS THE MAJOR OUTPUT CHART CONTROLS                  CHARTS     6
             C                  0   - GENERATE CHART                                 CHARTS     7
170          C                  1   - NO GENERATION OF CHART                         CHARTS     8
             C                                                                        CHARTS     9
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C      CHRTCNT(1)     - IF EQUAL TO 1 - CALLS WBSOUT(1) FOR EQUIPMENT    CHARTS    10
C                       ELEMENT LIFE CYCLE COSTS - FLEET SUMMARY          CHARTS    11
C      CHRTCNT(2)     - IF EQUAL TO 1 - CALLS WBSOUT(2) FOR UNIT         CHARTS    12
C                       SHIP COSTS BY EQUIPMENT ELEMENT                   CHARTS    13
C                     - IF NE. TO 0   - CALLS WBSTOT BECAUSE              CHARTS    14
C                       WBSOUT(2) WAS NOT CALLED                          CHARTS    15
C      CHRTCNT(3)     - IF EQUAL TO 1 - CALLS WBSOUT(3) FOR SHIP         CHARTS    16
C                       CLASS SUMMARY                                     CHARTS    17
C      CHRTCNT(4)     - IF EQUAL TO 0 - CALLS BUDGOP FOR LIFE            CHARTS    18
C                       CYCLE COSTS BY BUDGET APPROPRIATIONS              CHARTS    19
C      CHRTCNT(5)     - IF NE. TO 1   - CALLS ROLCNT FOR OUTPUT BY       CHARTS    20
C                       ROLL-UP NUMBER                                    CHARTS    21
C      CHRTCNT(6)     - IF EQUAL TO 1 - LISTS THE SUBELS ARRAY           CHARTS    22
C                       FOR ENTIRE CES FOR PROOFING                       CHARTS    23
C                                                                         CHARTS    24
C                                                                         CHARTS    25
      COMMON / CHARTS  /  CHRTCNT(15)                                     CHARTS    26
      INTEGER CHRTCNT                                                     CHARTS    27
C        ARRAY DEFINING THE ROLL-UP INPUT NUMBERS, TOTAL COUNT OF         ROLLPCT   2
C        COST ELEMENTS WITH SPECIFIC ROLL-UP NUMBERS TO BE OUTPUT,        ROLLPCT   3
C        ARRAY OF SELECTED WBS ELEMENTS NUMBERS, SELECTED ROLL-UP         ROLLPCT   4
C        OUTPUT FLAG                                                      ROLLPCT   5
      COMMON / ROLUPCT /  IROLL(150), ROLLTOT, ROLLSL(150), ROLLFLG       ROLLPCT   6
      INTEGER ROLLTOT, ROLLSL, ROLLFLG                                    ROLLPCT   7
C                                                                         ROLLPCT   8
C ********************** BUDG COMMON ************************            ROLLPCT   9
C                                                                         ROLLPCT   10
C        WBSOUT ROUTINE COMPUTED VALUES, ARRAYS AND CONTROLS NEEDED       OUTCNTS   2
C FOR THE OUT1 SUBROUTINE                                                 OUTCNTS   3
C        KSC ARRAY      - SHIP NAMES                                      OUTCNTS   4
C        IFLGCL         - OUTPUT COLUMN FLAG                              OUTCNTS   5
C                         = 0 COMPS OR SHIPS LESS THAN 9                  OUTCNTS   6
C                         = 1 COMPS OR SHIPS GREATER THAN 9               OUTCNTS   7
C                         = 2 LAST SET                                    OUTCNTS   8
C        IPG            - PAGING FLAG                                     OUTCNTS   9
C        FMT11J ARRAY   - ENCODED FORMAT 110                              OUTCNTS   10
C        FMT12J ARRAY   - ENCODED FORMAT 120                              OUTCNTS   11
C        KPR ARRAY      - COMPONENT OR SHIP NAMES FOR COLUMN HEADINGS     OUTCNTS   12
C        KC, K1         - INDICES FOR THE KPR ARRAY                       OUTCNTS   13
C        ITOTAL         - HOLLERITH CHARACTERS 'TOTAL'                    OUTCNTS   14
C        TCT ARRAY      - SUMMATION ARRAY FOR FINAL COSTS OF EITHER       OUTCNTS   15
C                         COMPONENTS OR SHIPS                             OUTCNTS   16
C        KCT            - INDEX FOR THE AWORD ARRAY                       OUTCNTS   17
C        AWORD ARRAY    - CONTAINS THE COSTS FOR ALL THE WBS VALUES       OUTCNTS   18
C                         FOR AT MOST 10 COMPONENTS OR SHIPS              OUTCNTS   19
      COMMON / OUTCNTS /  KSC(2), IFLGCL, IPG, FMT11J(14), FMT12J(4),     OUTCNTS   20
     1                    KPR(20), KC, K1, ITOTAL, TCT(150), KCT,         OUTCNTS   21
     2                    AWORD(150,10)                                   OUTCNTS   22
     3,FMT123(4),KWORD(3),JWORD(3),UNITFLY(4),TOTUFLY,SHIPFLY(43)         OUTCNTS   23
     4,TOTSHIP                                                            OUTCNTS   24
C                                                                         CERVLS    2
C                                                                         CERVLS    3
C ***** CERVLS (COST ESTIMATING RELATIONSHIP (CER) VALUES) COMMON ******  CERVLS    4
C                                                                         CERVLS    5
C     THE CERVLS COMMON CONTAINS LOCATIONS FOR STORAGE OF THE CER         CERVLS    6
C INPUT CARD COUNT, THE ROW ID'S, THE CER EQUATION NUMBERS, THE           CERVLS    7
C ROW CROSS REFERENCE NUMBERS, THE INPUT PARAMETERS, THE ADDITION         CERVLS    8
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C OR CERS CONTROL, STORAGE ARRAY FOR EQUIPMENT NAME, CER INDEX,          CERVLS      9
C AND TPUT/NPUT INDEXES FOR ALL EQUIPMENT INPUT.                         CERVLS     10
C                                                                        CERVLS     11
C      CERCT          - NUMBER OF CER'S FOR THIS PARTICULAR EQUIPMENT    CERVLS     12
C                       (1 WORD)                                         CERVLS     13
C      IFORC( )       - (F OR C) ALPHABETIC CHARACTER INDICATING         CERVLS     14
C                       'FACTOR' OR 'CER'.   (150 WORDS)                 CERVLS     15
C      IROWIC         - CBS ELEMENT NUMBER TO WHICH THIS CER APPLIES     CERVLS     16
C                       (150 WORDS)                                      CERVLS     17
C      IADD           - CER CONTROL FLAGS (0 THRU 6) FOR ADDITIVE        CERVLS     18
C                       CERS OR SUBELEMENTS. 0 INDICATES NO ADDING.      CERVLS     19
C                       1 THRU 6 INDICATE ADD UP SUBELEMENTS.            CERVLS     20
C                       (150 WORDS)                                      CERVLS     21
C      ICERNO         - REFERENCE NUMBER FOR CER EQUATIONS IN THE        CERVLS     22
C                       'CERCOMP' SUBROUTINE.  (150 WORDS)               CERVLS     23
C      IXREFNO        - CBS ELEMENT NUMBER USED IN CROSS REFERENCING     CERVLS     24
C                       A PREVIOUSLY COMPUTED CBS ELEMENT.  AT PRESENT   CERVLS     25
C                       ONLY CER EQUATION NUMBER 8 ALLOWS CROSS          CERVLS     26
C                       REFERENCING.   0 INDICATES NO CROSS-REF.         CERVLS     27
C                       (150 WORDS)                                      CERVLS     28
C      IXREFAD        - CER CONTROL FLAGS FOR CROSS-REFERENCING          CERVLS     29
C                       CER SUB-ELEMENTS. (150 WORDS)                    CERVLS     30
C      IFSTORE        - STORES 'FACTOR' PARAMETERS. (900 WORDS)          CERVLS     31
C      PSSTORE        - STORES NUMERICAL PARAMETERS. (900 WORDS)         CERVLS     32
C      ICER( )        - A SINGLY-SUBSCRIPTED ARRAY CONTAINING A          CERVLS     33
C                       MAXIMUM OF 100 DATA TRIPLETS WHOSE MEMBERS       CERVLS     34
C                       ARE:                                             CERVLS     35
C        ICER(1,4,7,   - EQUIPMENT NAME                                  CERVLS     36
C             ETC)                                                       CERVLS     37
C        ICER(2,4,6    - INDEX FOR MASS STORAGE UNIT 0.  INDEX          CERVLS     38
C             ETC)       BEGINS AT 1 AND INCREMENTS BY 9 (1,10,19,      CERVLS     39
C                        ETC). THE FOLLOWING DATA RECORDS ARE           CERVLS     40
C                        INDEXED:                                       CERVLS     41
C                           1   CERCT        6   IXREFNO               CERVLS     42
C                           2   IFORC        7   IXREFAD               CERVLS     43
C                           3   IROWIC       8   IFSTORE               CERVLS     44
C                           4   IADD         9   PSSTORE               CERVLS     45
C                           5   ICERNO                                 CERVLS     46
C        ICER(3,6,9    - INDEX FOR MASS STORAGE UNIT 2 AND 3.           CERVLS     47
C                        INDEX BEGINS AT 16 AND INCREMENTS BY 2         CERVLS     48
C                        (18,20,22,ETC) AND IS IDENTICAL TO THE         CERVLS     49
C                        THIRD MEMBER OF DATA TRIPLET STORED IN         CERVLS     50
C                        THE IREC ARRAY.                                CERVLS     51
C      SUBELS( , )    - SUBELS IS A CROSS-HATCHED ARRAY WHICH IS       CERVLS     52
C                       RELATED ONE-TO-ONE TO THE CBS.                   CERVLS     53
C                       IT IS USED LOCALLY WITHIN 'COMPCIF' AND          CERVLS     54
C                       'CERCOMP' FOR INTERIM STORAGE OF UP TO           CERVLS     55
C                       SIX SUBELEMENTS, 1 THRUPUT, AND 1 TOTAL          CERVLS     56
C                       VALUE   FOR EACH CBS ELEMENT.                    CERVLS     57
C      FACTOR( )      - A FACTOR IS A PRECURSOR OF ONE OR MORE           CERVLS     58
C                       CERS.                                            CERVLS     59
C                                                                        CERVLS     60
C                                                                        CERVLS     61
      COMMON /CERVLS/ CERCT, IFORC(150), IROWID(150), IADD(150),         CERVLS     62
     C                ICERNO(150), IXREFNO(150),IXREFAD(150),           CERVLS     63
     2                 IFSTORE(6,150),PSSTORE(6,150),ICER(300),         CERVLS     64
     C                SUBELS(8,150), FACTORS(150)                       CERVLS     65
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      INTEGER CEPCT                                                     CERVLS   66
C                                                                       CERVLS   67
C ******************** ROLUPCT COMMON ************************          CERVLS   68
C                                                                       CERVLS   69
      DIMENSION BLANX(20)                                               WBSOUT   15
      INTEGER SVIEND,BLANX,ASMOTES                                      WBSOUT   16
C                                                                       WBSOUT   17
C           INDXTOT IS THE STARTING INDEX FOR STORAGE OF THE SHIP       WBSOUT   18
C           SUMMATIONS ON UNIT 10                                       WBSOUT   19
      DATA INDXTOT / 1251 /                                             WBSOUT   20
      DATA (BLANX(L),L=1,20) / 20*10H          /                        WBSOUT   21
      ITOTAL = 7H TOTAL                                                 WBSOUT   22
      MASK4 = 77777777000000000000B                                     WBSOUT   23
      ASMOTES = 10HASMO MODEL                                           WBSOUT   24
      IF (ICALL.EQ.3) GO TO 200                                         WBSOUT   25
C                                                                       WBSOUT   26
C OUTPUT BY SHIP CLASS (OR FLEET) FOR ALL EQUIPMENTS                    WBSOUT   27
C                                                                       WBSOUT   28
C                                                                       WBSOUT   29
      INC = 3                                                           WBSOUT   30
      IPH2   = IPH(2)                                                   WBSOUT   31
      NWBSM1 = NWBS - 1                                                 WBSOUT   32
      IPH2M1 = IPH(2) - 1                                               WBSOUT   33
      IPHL   = IPH(NPH)                                                 WBSOUT   34
      IF (ICALL.EQ.1) GO TO 100                                         WBSOUT   35
C                                                                       WBSOUT   36
C                 LOOP THROUGH ALL SHIPS                                WBSOUT   37
      DO  95 ISUBS=1,NOSUB                                              WBSOUT   38
C                                                                       WBSOUT   39
      TOTSHIP = 0.0                                                     WBSOUT   40
C                 SETUP INDEX RETRIEVAL                                 WBSOUT   41
      IBEG = ICOMP(ISUBS) * 3 + 1                                       WBSOUT   42
      NUM = NOCOMP(ISUBS)                                               WBSOUT   43
      IEND = IBEG + (NUM-1)*3                                           WBSOUT   44
      JBEGX = IBEG                                                      WBSOUT   45
C                                                                       WBSOUT   46
      CALL REFMT ( NMSUB(1,ISUBS), KSC(1), 2, 1HR )                     WBSOUT   47
C                                                                       WBSOUT   48
      DO 15 J=1,NWBS                                                    WBSOUT   49
      TOT(J) = 0.0                                                      WBSOUT   50
   15 CONTINUE                                                          WBSOUT   51
C                                                                       WBSOUT   52
C      IFLGCL (FLAG WORD) -  = 0 EQUIP AND SHIP LESS THAN 9             WBSOUT   53
C                            = 1 EQUIP AND SHIP GREATER THAN 9          WBSOUT   54
C                            = 2 LAST SIT                               WBSOUT   55
C                                                                       WBSOUT   56
      IPG = 0                                                           WBSOUT   57
      ROLLFLG = 0                                                       WBSOUT   58
      IFLGCL = 0                                                        WBSOUT   59
      IS1 = 1                                                           WBSOUT   60
      IS2 = NUM                                                         WBSOUT   61
      NCOL = NUM + 1                                                    WBSOUT   62
      NNUM = NUM                                                        WBSOUT   63
      IF ( NCOL .LE. 10 ) GO TO 20                                      WBSOUT   64
C                                                                       WBSOUT   65
      NCOL = 10                                                         WBSOUT   66
      NNUM = 10                                                         WBSOUT   67
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      IS2  = 10                                                         WBSOUT   68
      IFLGCL = 1                                                        WBSOUT   69
      SVIEND = IEND                                                     WBSOUT   70
      IEND = IBEG + 27                                                  WBSOUT   71
C                                                                       WBSOUT   72
C     TEST TO SEE IF EXACTLY 10 EQUIPMENTS ARE TO BE OUTPUT.            WBSOUT   73
C IF YES, THEN DECREASE TO 9 SO THAT ONE WILL APPEAR ALONG WITH         WBSOUT   74
C THE "TOTAL" ON THE NEXT SET OF OUTPUT.                                WBSOUT   75
      IF ( NUM .NE. 10 ) GO TO 20                                       WBSOUT   76
      NCOL = 9                                                          WBSOUT   77
      NNUM = 9                                                          WBSOUT   78
      IS2 = 9                                                           WBSOUT   79
      IEND = IBEG + 24                                                  WBSOUT   80
C                                                                       WBSOUT   81
   20 CONTINUE                                                          WBSOUT   82
C                                                                       WBSOUT   83
   22 CONTINUE                                                          WBSOUT   84
      NSP = 90/NCOL - 8                                                 WBSOUT   85
      NSPP1 = NSP + 1                                                   WBSOUT   86
      ENCODE (120,111,FMT110) NNUM,NSPP1,NCOL,NSPP1,NCOL,NSP            WBSOUT   87
      ENCODE ( 40,122,FMT120) NCOL,NSP                                  WBSOUT   88
      ENCODE ( 40,123,FMT123) NCOL,NSP                                  WBSOUT   89
   23 CONTINUE                                                          WBSOUT   90
      IF ((TITLE.AND.MASK4) .EQ. (ASMDTES.AND.MASK4))                   WBSOUT   91
     C   ENCODE (40,121,FMT120) NCOL,NSP                                WBSOUT   92
C                                                                       WBSOUT   93
      KCT = 0                                                           WBSOUT   94
      DO 107 K6=1,43                                                    WBSOUT   95
  107 SHIPFLY(K6) = 0.0                                                 WBSOUT   96
      DO 40 J=IBEG,IEND,INC                                             WBSOUT   97
      CALL READMS ( 3, ARAY, LENR, IREC(J) )                            WBSOUT   98
      KCT = KCT + 1                                                     WBSOUT   99
C                                                                       WBSOUT  100
      IDXCS3 = JBEGX - 1                                                WBSOUT  101
      IDXCS4 = IDXCS3/3                                                 WBSOUT  102
      CST3   = FLOAT(CSTABLE(IDXCS3))                                   WBSOUT  103
      CST4 = CSTABEL(IDXCS4)                                            WBSOUT  104
      AWORD(NWBS,KCT) = 0.0                                             WBSOUT  105
      DO 30 I=1,NWBSM1                                                  WBSOUT  106
      IF (NPH.EQ.2) GO TO 24                                            WBSOUT  107
      IF (I.LT.IPHL) GO TO 24                                           WBSOUT  108
      AWORD(I,KCT) = ARAY(I,1) * CST3                                   WBSOUT  109
      GO TO 26                                                          WBSOUT  110
   24 AWORD(I,KCT) = ARAY(I,1) * CST4                                   WBSOUT  111
   26 TOT(I) = TOT(I) + AWORD(I,KCT)                                    WBSOUT  112
      DO 127 K2=1,NOFLY                                                 WBSOUT  113
      IF(I.NE.IFLYROW(K2)) GO TO 127                                    WBSOUT  114
      SHIPFLY(KCT) = SHIPFLY(KCT) + AWORD(I,KCT)                        WBSOUT  115
      IF(K2.EQ.NOFLY) TOTSHIP = TOTSHIP + SHIPFLY(KCT)                  WBSOUT  116
C     WRITE(6,301) SHIPFLY(KCT),TOTSHIP                                 WBSOUT  117
  127 CONTINUE                                                          WBSOUT  118
   30 CONTINUE                                                          WBSOUT  119
C                                                                       WBSOUT  120
      AWORD(NWBS,KCT) = AWORD(1,KCT) + AWORD(IPH2,KCT) + AWORD(IPHL,KCT) WBSOUT  121
      TOT(NWBS) = TOT(1) + TOT(IPH2) + TOT(IPHL)                        WBSOUT  122
      JBEGX = JBEGX + 3                                                 WBSOUT  123
      IF (IPHL.GT.IPH2) GO TO 40                                        WBSOUT  124
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      AWORD(NWBS,KCT) = AWORD(NWBS,KCT) - AWORD(IPHL,KCT)
      TOT(NWBS) = TOT(NWBS) - TOT(IPHL)
   40 CONTINUE
C
      KC = 0
      DO 50 I1=IS1,IS2
      KC = KC + 1
      KPR(KC) = NMCOMP(1,I1,ISUBS)
      K1 = KC + 10
      KPR(K1) = NMCOMP(2,I1,ISUBS)
   50 CONTINUE
C
C
C     GENERATE OUTPUT FOR ALL CBS COST ELEMENTS FOR 'K' NUMBER
C OF EQUIPMENTS
C
C ***********************************************************
      CALL OUT1 (ICALL)
C
C ***********************************************************
C
C     CHECK FOR END OF THIS SHIP'S EQUIPMENTS
C
C
   80 CONTINUE
C
C
   85 CONTINUE
      IF (IFLGCL.NE.1) GO TO 90
      IPG = 0
      IS1 = IS2 + 1
      IS2 = IS2 + 10
      IF (IS2.EQ.NUM .AND. (MOD(IS2,10)).EQ.0) IS2 = IS2 - 1
      IF (IS2.GT.NUM) IS2 = NUM
      NCOL = IS2 - IS1 + 1
      IF (IS2.EQ.NUM) NCOL = NCOL + 1
      NNUM = NCOL
      IF (IS2.EQ.NUM) NNUM = NNUM - 1
      IBEG = IEND + 3
      IEND = IBEG + ((IS2 - IS1) * 3)
      IF (IS2.EQ.NUM) IFLGCL = 2
      GO TO 20
C
C                OUTPUT TOTALS FOR THIS SHIP
C
   90 CONTINUE
      INDX = INDXTOT + ISUBS - 1
      CALL WRITMS ( 10, TOT, NWBS, INDX )
C
   95 CONTINUE
C
      RETURN
C
C          F L E E T   L E V E L   O U T P U T - - -
C
C     LOOP THROUGH ALL EQUIPMENTS 10 AT A TIME AND LIST COSTS FOR
C THE TOTAL NUMBER OF EACH EQUIPMENT ACROSS THE CBS.
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C
  100 CONTINUE
      DO 103 IT=1,NWBS
  103 TOT(IT) = 0.0
C
C THE FOLLOWING LOGIC SETS UP RECOVERY INDICES FOR COMMON ARRAYS
C AND MASS STORAGE FILES, AND ALSO COLUMN & SPACING COUNTERS FOR
C ENCODING OUTPUT FORMATS AND COUNTING OUTPUT ARRAY COLUMNS:
C
C       IBEG            - BEGINNING INDEX FOR READING EQUIPMENT COST
C                         FROM MASS STORAGE UNIT 3
C       IEND            - ENDING INDEX FOR SAME SERIES OF READS FROM
C                         MS UNIT 3
C       IPG             - PAGINATION INDEX.  INITIALIZED HERE,
C                         INCREMENTED IN "OUT1"
C       IFLGCL          - COMPLETION FLAG
C                               0 = INITIAL VALUE
C                               1 = CONTINUE PROCESSING EQUIPMENT
C                               2 = COMPLETION.  ALL EQUIPMENT PROCESSED.
C       IS1             - BEGINNING INDEX FOR RECOVERING EQUIPMENT
C                         MNEMONICS
C       IS2             - ENDING INDEX FOR SAME SERIES OF MNEMONICS
C       NCOL            - NUMBER OF COLUMNS OF OUTPUT TO SET UP
C       NNUM            - NUMBER OF EQUIPMENT COLUMNS TO SET UP
      IBEG   = 1
      IEND   = 1 + (ICCTR - 1) * 3
      IPG    = 0
      IFLGCL = 0
      IS1    = 1
      IS2    = ICCTR
      NCOL   = ICCTR + 1
      NNUM   = ICCTR
C
C       MODIFY INDICES FOR SITUATION WHERE THERE ARE 9 OR MORE EQUIPMENTS
C
      IF (NCOL.LE.10) GO TO 115
      NCOL   = 10
      NNUM   = 10
      IS2    = 10
      IFLGCL = 1
      IEND   = IBEG + 27
C
C       MODIFY INDICES FOR SITUATION WHERE THERE ARE EXACTLY 9 EQUIPMENTS
C
      IF (ICCTR.NE.9) GO TO 115
      NCOL = 10
      NNUM   = 9
      IS2    = 9
      IFLGCL = 2
      IEND   = IBEG + 24
C
C       MAJOR DO-LOOP, THROUGH ALL EQUIPMENTS, 10 AT A TIME
C
  115 CONTINUE
      JCT = 0
      ICCTR2 = ICCTR
      IF((MOD(ICCTR,40)).EQ.0) ICCTR2 = ICCTR + 1
```

```
      DO 195 ICOMPS=1,ICCTR2,10
  116 CONTINUE
      NSP = 90/NCOL - 6
      NSPP1 = NSP + 1
      ENCODE (120,111,FMT110) NNUM,NSPP1,NCOL,NSPP1,NCOL,NSP
      ENCODE ( 40,122,FMT120) NCOL,NSP
      ENCODE ( 40,123,FMT123) NCOL,NSP
  117 CONTINUE
      IF ((TITLE.AND.MASK4) .EQ. (ASMDTES.AND.MASK4))
     C   ENCODE (40,121,FMT120) NCOL,NSP
C
C DO-LOOP 140 STEPS ACROSS OUTPUT ARRAY ONE COLUMN AT A TIME
C AND INDEX 'J' IDENTIFIES AN EQUIPMENT COLUMN
C
      KCT = 0
      DO 105 K4=1,40
  105 UNITFLY(K4) = 0.0
      DO 140 J=IBEG,IEND,INC
      NDXMS3 = J + 2
      CALL READMS (3,AWAY,NWBS,ICER(NDXMS3))
      JCT = JCT + 1
      KCT = KCT + 1
      AWORD (NWBS,KCT) = 0.0
      Q1 = QCMPT(JCT)
      Q2 = QCMPT2(JCT)
C
C DO-LOOP 130 STEPS DOWN THROUGH THE OUTPUT ARRAY ONE ROW AT A TIME
C AND INDEX 'I' IDENTIFIES A CBS ELEMENT ROW
C "Q1" MULTIPLIER IS USED ONLY FOR CBS ELEMENTS IN "O & S" PHASES
C "Q2" MULTIPLIER IS USED FOR CBS ELEMENTS IN "RDT&E" AND "INV" PHASES
C
      DO 130 I=1,NWBSM1
      IF (NPH.EQ.2) GO TO 124
      IF (I.LT.IPHL) GO TO 124
      IF (I.GT.IPH2M1 .AND. I.LT.IPHL) GO TO 124
      AWORD(I,KCT) = AWAY(I,1) * Q1
      GO TO 126
  124 AWORD(I,KCT) = AWAY(I,1) * Q2
C
C THE "TOT" ARRAY CONTAINS THE RUNNING CROSS-FOOT TOTALS THRU THE CBS
C STRUCTURE; IT PRINTS AS THE LAST (RIGHT-MOST) COLUMN IN THE CHART.
C
  126 TOT(I) = TOT(I) + AWORD(I,KCT)
      DO 125 K=1,NOFLY
      IF(I.NE.IFLYROW(K)) GO TO 125
      UNITFLY(KCT) = UNITFLY(KCT) + AWAY(I,1)
      IF(K.EQ.NOFLY) TOTUFLY = TOTUFLY + UNITFLY(KCT)
C     WRITE(6,302) UNITFLY(KCT),TOTUFLY
  125 CONTINUE
  130 CONTINUE
C
C     "AWORD(NWBS,KCT)" IS THE COLUMN BOTTOM TOTAL FOR EACH EQUIPMENT
C THIS CODE FOR EVALUATING "AWORD(NWBS,KCT)" AND "TOT(NWBS)" WORKS
C FOR 2-PHASE WBS (I.E. ASMD RUN); AND FOR A 3- OR 4-PHASE WBS
C (I.E. SINCS RUN) WITH THE PRESUMPTION THAT A 3-PHASE RUN HAS
C RDT&E, INVESTMENT AND O&S, AND THAT A 4-PHASE RUN MERELY SPLITS
C THE INVESTMENT PHASE INTO "INITIAL" AND "FULL" PRODUCTION COSTS.
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C                                                                       WBSOUT   296
      AWORD(NWBS,KCT) = AWORD(1,KCT) + AWORD(IPH2,KCT) + AWORD(IPHL,KCT) WBSOUT   297
      IF (NPP.EQ.2) AWORD(NWBS,KCT) = AWORD(1,KCT) + AWORD(IPH2,KCT)    WBSOUT   298
  140 CONTINUE                                                          WBSOUT   299
      IF (JCT.EQ.ICCTR) TOT(NWBS) = TOT(1) + TOT(IPH2) + TOT(IPHL)      WBSOUT   300
      IF (NPP.EQ.2 .AND. JCT.EQ.ICCTR) TOT(NWBS) = TOT(1) + TOT(IPH2)   WBSOUT   301
C                                                                       WBSOUT   302
C     DO-LOOP 150 FILLS "KPR" ARRAY WITH EQUIP COLUMN HEADING MNEMONICS WBSOUT   303
C                                                                       WBSOUT   304
      CALL MOVLEV (BLANX,KPR,20)                                        WBSOUT   305
      KC = 0                                                            WBSOUT   306
      DO 150 I1=IS1,IS2                                                 WBSOUT   307
      KC = KC + 1                                                       WBSOUT   308
      K1 = KC + 10                                                      WBSOUT   309
      KPR(KC) = NAMESC(I1,1)                                            WBSOUT   310
      KPR(K1) = NAMESC(I1,2)                                            WBSOUT   311
  150 CONTINUE                                                          WBSOUT   312
C                                                                       WBSOUT   313
C CALL SUBRTN "OUT1" TO PRINT PAGE HEADINGS AND LIST THE AWORD ARRAY    WBSOUT   314
C ***************************************************************     WBSOUT   315
C                                                                       WBSOUT   316
      CALL OUT1 (ICALL)                                                 WBSOUT   317
C                                                                       WBSOUT   318
C ***************************************************************     WBSOUT   319
C THE FOLLOWING LOGIC COMPLEMENTS THE EARLIER                           WBSOUT   320
C RECOVERY INDEX AND COLUMN & SPACING COUNTER LOGIC                     WBSOUT   321
C                                                                       WBSOUT   322
      IF (IFLGCL.NE.1) RETURN                                           WBSOUT   323
      IPG = 0                                                           WBSOUT   324
      IS1 = IS2 + 1                                                     WBSOUT   325
      IS2 = IS2 + 10                                                    WBSOUT   326
      IF (IS2.EQ.ICCTR .AND. (MOD(IS2,10)).EQ.0) IS2 = IS2 - 1          WBSOUT   327
      IF (IS2.GT.ICCTR) IS2 = ICCTR                                     WBSOUT   328
      NCOL = IS2 - IS1 + 1                                              WBSOUT   329
      IF (IS2.EQ.ICCTR) NCOL = NCOL + 1                                 WBSOUT   330
      NNUM = NCOL                                                       WBSOUT   331
      IF (IS2.EQ.ICCTR) NNUM = NCOL - 1                                 WBSOUT   332
      IBEG = IEND + 3                                                   WBSOUT   333
      IEND = IBEG + ((NNUM - 1) * 3)                                    WBSOUT   334
      IF (IS2.EQ.ICCTR) IFLGCL = 2                                      WBSOUT   335
  195 CONTINUE                                                          WBSOUT   336
C                                                                       WBSOUT   337
C              OUTPUT SHIP SUMMARY CHARTS                               WBSOUT   338
  200 CONTINUE                                                          WBSOUT   339
C                                                                       WBSOUT   340
      TOTSHIP = 0.0                                                     WBSOUT   341
      IPG = 0                                                           WBSOUT   342
      IBEG = INDXTOT                                                    WBSOUT   343
      IEND = IBEG + NOSUB - 1                                           WBSOUT   344
      NUM = NOSUB                                                       WBSOUT   345
C                                                                       WBSOUT   346
      DO 210 J=1,NWBS                                                   WBSOUT   347
      TOT(J) = 0.0                                                      WBSOUT   348
  210 CONTINUE                                                          WBSOUT   349
C                                                                       WBSOUT   350
      IFLGCL = 0                                                        WBSOUT   351
      IPG = 0                                                           WBSOUT   352
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      ROLLFLG = 0                                                       WBSOUT   353
      ISHSUB = 0                                                        WBSOUT   354
      IS1 = 1                                                           WBSOUT   355
      IS2 = NUM                                                         WBSOUT   356
      NCOL = NUM + 1                                                    WBSOUT   357
      NNUM = NUM                                                        WBSOUT   358
      IF ( NCOL .LE. 10 ) GO TO 220                                     WBSOUT   359
C                                                                       WBSOUT   360
      NCOL = 10                                                         WBSOUT   361
      NNUM = 10                                                         WBSOUT   362
      IS2  = 10                                                         WBSOUT   363
      IFLGCL = 1                                                        WBSOUT   364
      SVIEND = IEND                                                     WBSOUT   365
      IEND = IBEG + 9                                                   WBSOUT   366
C                                                                       WBSOUT   367
C                 TEST TO SEE IF EXACTLY 10 SHIPS ARE TO BE             WBSOUT   368
C           OUTPUT. IF YES - DECREASE TO 9 SO THAT 1 WILL APPEAR        WBSOUT   369
C           ALONG WITH THE TOTAL ON NEXT SET OF OUTPUT.                 WBSOUT   370
      IF ( NUM .NE. 10 ) GO TO 220                                      WBSOUT   371
      NCOL = 9                                                          WBSOUT   372
      NNUM = 9                                                          WBSOUT   373
      IS2 = 9                                                           WBSOUT   374
      IEND = IEND - 1                                                   WBSOUT   375
C                                                                       WBSOUT   376
  220 CONTINUE                                                          WBSOUT   377
C                                                                       WBSOUT   378
  225 CONTINUE                                                          WBSOUT   379
      NSP = 90/NCOL - 8                                                 WBSOUT   380
      NSPP1 = NSP + 1                                                   WBSOUT   381
      ENCODE (120,111,FMT110) NNUM,NSPP1,NCOL,NSPP1,NCOL,NSP            WBSOUT   382
      ENCODE ( 40,122,FMT120) NCOL,NSP                                  WBSOUT   383
      ENCODE ( 40,123,FMT123) NCOL,NSP                                  WBSOUT   384
  226 CONTINUE                                                          WBSOUT   385
      IF ((TITLE.AND.MASK4) .EQ. (ASMDTES.AND.MASK4))                   WBSOUT   386
     C   ENCODE (40,121,FMT120) NCOL,NSP                                WBSOUT   387
C                                                                       WBSOUT   388
      KCT = 0                                                           WBSOUT   389
      DO 106 K5=1,43                                                    WBSOUT   390
  106 SHIPFLY(K5) = 0.0                                                 WBSOUT   391
      DO 240 J=IBEG,IEND                                                WBSOUT   392
      CALL READMS ( 10, ARAY, NWBS, J )                                 WBSOUT   393
      ISHSUB = ISHSUB + 1                                               WBSOUT   394
      KCT = KCT + 1                                                     WBSOUT   395
C                                                                       WBSOUT   396
      DO 230 I=1,NWBS                                                   WBSOUT   397
      AWORD(I,KCT) = ARAY(I,1) * FLOAT(SHIPSM(ISHSUB))                  WBSOUT   398
      TOT(I) = TOT(I) + AWORD(I,KCT)                                    WBSOUT   399
      DO 128 K3=1,NOFLY                                                 WBSOUT   400
      IF(I.NE.IFLYROW(K3)) GO TO 128                                    WBSOUT   401
      SHIPFLY(KCT)    = SHIPFLY(KCT)   + AWORD(I,KCT)                   WBSOUT   402
      IF(K3.EQ.NOFLY) TOTSHIP = TOTSHIP + SHIPFLY(KCT)                  WBSOUT   403
C     WRITE(6,301) SHIPFLY(KCT),TOTSHIP                                 WBSOUT   404
  128 CONTINUE                                                          WBSOUT   405
  230 CONTINUE                                                          WBSOUT   406
C                                                                       WBSOUT   407
  240 CONTINUE                                                          WBSOUT   408
C                                                                       WBSOUT   409
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685                KC = 0                                                    WBSCUT    410
                   DO 250 I1=IS1,IS2                                         WBSCUT    411
                   KC = KC + 1                                               WBSCUT    412
                   KPF(KC) = NMSUB(1,I1)                                     WBSCUT    413
                   K1 = KC + 10                                              WBSCUT    414
690                KPF(K1) = NMSUB(2,I1)                                     WBSCUT    415
                 250 CONTINUE                                                WBSCUT    416
               C                                                             WBSCUT    417
               C                 OUTPUT SHIP SUMMARY                         WBSCUT    418
               C ***********************************************************WBSCUT    419
695            C                                                             WBSCUT    420
                   CALL OUT1 (ICALL)                                         WBSCUT    421
               C                                                             WBSCUT    422
               C ***********************************************************WBSCUT    423
                 260 CONTINUE                                                WBSCUT    424
700            C                                                             WBSCUT    425
                   IF ( IFLGCL .NE. 1 ) GO TO 300                            WBSCUT    426
               C                                                             WBSCUT    427
                   IPG = 0                                                   WBSCUT    428
                   ITEMP = NUM - IS2                                         WBSCUT    429
705                IF ( ITEMP .LT. 10 ) GO TO 290                            WBSCUT    430
                   IS1 = IS2 + 1                                             WBSCUT    431
                   IS2 = IS1 + 9                                             WBSCUT    432
                   IFLGCL = 1                                                WBSCUT    433
                   IBEG = IEND + 1                                           WBSCUT    434
710                IEND = IBEG + 9                                           WBSCUT    435
                   NCOL = 10                                                 WBSCUT    436
                   NNUM = 10                                                 WBSCUT    437
                   IF ( ROLLFLG .EQ. 2 ) ROLLFLG = 0                         WBSCUT    438
               C                                                             WBSCUT    439
715            C                 TEST FOR EVEN NUMBER OF SHIPS TO BE OUTPUT  WBSCUT    440
                   IF ( IS2 .NE. NUM ) GO TO 220                             WBSCUT    441
                   IS2 = IS2 - 1                                             WBSCUT    442
                   IEND = IEND - 1                                           WBSCUT    443
                   NCOL = 9                                                  WBSCUT    444
720                NNUM = 9                                                  WBSCUT    445
                   GO TO 220                                                 WBSCUT    446
               C                                                             WBSCUT    447
                 290 CONTINUE                                                WBSCUT    448
                   IFLGCL = 2                                                WBSCUT    449
725                IS1 = IS2 + 1                                             WBSCUT    450
                   IS2 = NUM                                                 WBSCUT    451
                   NCOL = ITEMP + 1                                          WBSCUT    452
                   NNUM = NCOL - 1                                           WBSCUT    453
                   IBEG = IEND + 1                                           WBSCUT    454
730                IEND = SVIENU                                             WBSCUT    455
                   IF ( ROLLFLG .EQ. 2 ) ROLLFLG = 0                         WBSCUT    456
                   GO TO 220                                                 WBSCUT    457
               C                                                             WBSCUT    458
                 300 CONTINUE                                                WBSCUT    459
735            C                                                             WBSCUT    460
                   RETURN                                                    WBSCUT    461
               C                                                             WBSCUT    462
                 104 FORMAT ( 1X)                                            WBSCUT    463
                 110 FORMAT (5H(44X,,I2,1H(,I2,8HX,A7)  /,39H12H  APPRC  RCH,11X,12HCGS WBSCUT    464
740               1T ELEMENT,9X,,I2,1H(,I2,8HX,A7)  /,31H1X,7(1H-),1X,3(1H-),2X,3(1H WBSCUT    465
                  2-),,I2,1H(,I2,11HX, 7(1H-)))    )                        WBSCUT    466
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      SUBROUTINE WBSOUT      /4/74   OPT=2                    FTN 4.6+433        07/31/79  23.53.41

                  111 FORMAT (5H(44X,,I2,1H(,I2,7HX,A7) /,                                    WBSOUT    467
                     C 39H12H  APPROD  ROM,11X,12HCOST ELEMENT,9X,,I2,1H(,I2,7HX,A7) /,       WBSOUT    468
                     C 31H1X,7(1H-),1X,3(1H-),2X,30(1H-),,I2,1H(,I2,10HX,8(1H-)))             WBSOUT    469
745               120 FORMAT (21H(1X,A7,1X,I3,2X,3A10,,I2,1H(,I2,9HX,F 7.2))    )            WBSOUT    470
                  121 FORMAT (21H(1X,A7,1X,I3,2X,3A10,,I2,1H(,I2,8HX,F7.3)))                  WBSOUT    471
                  122 FORMAT (21H(1X,A7,1X,I3,2X,3A10,,I2,1H(,I2,8HX,F8.2)))                  WBSOUT    472
                  123 FORMAT (13H(A1,13X,3A10,,I2,1H(,I2,8HX,F8.2)))                          WBSOUT    473
                  301 FORMAT (1HO,*SHIPFLY(KCT) = *,F8.2,5X,*TOTSHIP = *,F8.2)                WBSOUT    474
75                302 FORMAT (1HO,*UNITFLY(KCT) = *,F8.2,5X,*TOTUFLY = *,F8.2)                WBSOUT    475
                      END                                                                     WBSOUT    476
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SUBROUTINE HEAD       74/74   OPT=2                FTN 4.6+433        07/31/79  23.53.41

      SUBROUTINE HEAD                                                          HEAD      2
C                                                                              SYST      2
C ********************* NAMES COMMON ***************************             SYST      3
C                                                                              SYST      4
C       NMSYS           - NAME OF THE SYSTEM                                   SYST      5
C       NOSUB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED               SYST      6
C       NMSUB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS                   SYST      7
C       NOCOMP( )       - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)             SYST      8
C                         (RUNNING TOTAL FOR EQUIPMENTS)                       SYST      9
C       NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES              SYST     10
C                         IN WBSOUT (INDEXED BY EQUIPMENT NUMBER               SYST     11
C                         AND SHIPCLASS NUMBER)                                SYST     12
C       NAMESC( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)            SYST     13
C                         FOR EQUIPMENT QUANTITIES TABLE - FLEET               SYST     14
C                         SUMMARY                                              SYST     15
C       EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)                  SYST     16
C       SHIPNM          - PRESENT SHIPCLASS (BEING PROCESSED)                  SYST     17
C                                                                              SYST     18
C                                                                              SYST     19
      COMMON / NAMES   /  NMSYS, NOSUB, NMSUB(2,43), NOCOMP(43),               SYST     20
     1         NMCOMP(2,100,43),NAMESC(100,2),EQUI,SHIPNM                      SYST     21
      INTEGER EQUI,SHIPNM                                                      SYST     22
C ****************MISC (MISCELLANEOUS) COMMON ********************            SYST     23
C                                                                              SYST     24
C       NAP             - COUNT OF DIFFERENT APPROPRIATION CODES               SYST     25
C       APPRO( )        - APPROPRIATION CODE NAMES                             SYST     26
C       SPCL( , )       - PERCENTAGES FOR CBS ELEMENT COST SPLITS              SYST     27
C       NPH             - COUNT OF THE LIFE CYCLE PHASES                       SYST     28
C       IPH( )          - FIRST CBS ELEMENT NUMBER OF EACH PHASE               SYST     29
C       IPB( )          - CBS ELEMENT NUMBER FOR PAGE BREAKS                   SYST     30
C                         (LAST CBS NUMBER FOR THE PAGE)                       SYST     31
C       IPHASE( , )     - TITLES OF CBS PHASES                                 SYST     32
C       FLEETZ          - FLEET (SYSTEM) SIZE                                  SYST     33
C       NROLL( )        - LOWEST COST ELEMENT LEVEL TO BE PRINTED              SYST     34
C                         (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)          SYST     35
C       ROTOT           - TOTAL ROTBL COST                                     SYST     36
C       TOTINV          - TOTAL INVESTMENT COST MINUS TOTAL RIPOUT             SYST     37
C       TOTRIP          - TOTAL RIPOUT COST                                    SYST     38
C       SMISRC          - MISSILE ROTBL COST                                   SYST     39
C       NOFLY           - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN             SYST     40
C                         FLYAWAY COSTS                                        SYST     41
C       IFLYROW( )      - CBS ELEMENT NUMBER FOR FLYAWAY COSTS                 SYST     42
C       NOYRS           - NUMBER OF YEARS IN SHIP INSTALLATION TABLE           SYST     43
C       IYEARS          - YEARS COVERED BY THE SHIP INSTALLATION TABLE         SYST     44
C       IYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE           SYST     45
C                         PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE)      SYST     46
C       FNOTES( , )     - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS          SYST     47
C                                                                              SYST     48
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),              SYST     49
     1         IPHASE(2,4),FLEETZ,NROLL(4),ROTOT,TOTINV,TOTRIP,                SYST     50
     2         SMISRO,NOFLY,IFLYROW(25),NOYRS,IYEARS(12),IYRS,                 SYST     51
     3         FNOTES(5,12)                                                    SYST     52
      INTEGER APPRO,SPCL,FLEETZ                                                SYST     53
C                                                                              SYST     54
C       GENERAL TITLE TO BE USED ON ALL CHARTS                                 GENTLE    2
      COMMON / GENTLE  /  TITLE(3)                                             GENTLE    3
      INTEGER TITLE                                                            GENTLE    4
```

```
      C                                                                 HEAD      5
      C     PRINT SYSTEM HEADER (DATE AND SYSTEM NAME)                  HEAD      6
      C                                                                 HEAD      7
            WRITE (6,200) NMSYS,TODAY,TITLE,WHEN                        HEAD      8
        200 FORMAT (1H1,A10,116X,A10  /  1X,2A10,A6,100X,A10)           HEAD      9
            RETURN                                                      HEAD     10
      C                                                                 HEAD     11
            ENTRY HEAD1                                                 HEAD     12
      C                                                                 HEAD     13
      C GET THE DATE AND TIME OF RUN FROM SYSTEM MAINFRAME              HEAD     14
      C                                                                 HEAD     15
            WHEN  = TIME(D)                                             HEAD     16
            TODAY = DATE(D)                                             HEAD     17
            RETURN                                                      HEAD     18
            END                                                         HEAD     19
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      SUBROUTINE DATAOP                                                 CATAOP     2
C                                                                       MS2        2
C ************** MS (LENGTH AND COUNTER) COMMON ****************        MS2        3
C                                                                       MS2        4
C                                                                       MS2        5
C      LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH        MS2        6
C                        (TYPICALLY 150)                                MS2        7
C      NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)        MS2        8
C      ICCTR           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT          MS2        9
C                        ELEMENTS TABLE                                 MS2       10
C      L150            - (150 WORDS) RECORD LENGTH OF 7 ARRAYS          MS2       11
C                        IN THE "CERVLS" COMMON                         MS2       12
C      L900            - (900 WORDS) RECORD LENGTH OF 2 ARRAYS          MS2       13
C                        IN THE "CERVLS" COMMON                         MS2       14
C                                                                       MS2       15
      COMMON / MS2 / LENR,NWBS,ICCTR,L150,L190                          MS2       16
C                                                                       MS2       17
C                                                                       MS2       18
C                                                                       MS2       19
C                                                                       NPUT       2
C************************** NPUT COMMON ***************************    NPUT       3
C                                                                       NPUT       4
C VARIOUS OTHER ARRAYS ARE EQUIVALENCED TO THE "ARAY" ARRAY AS IN:      NPUT       5
C                                                                       NPUT       6
C  - SLCCM  : ROW   = ARAY(1,1)                                         NPUT       7
C  - BUDGET : CG    = ARAY(1,2)                                         NPUT       8
C  - INPUPD : ICREC = ARAY(1,1)                                         NPUT       9
C  - COMPCMP: ROW   = ARAY(1,1)                                         NPUT      10
C  - APCELM : IRAY  = ARAY(1,1)                                         NPUT      11
C                                                                       NPUT      12
      COMMON / NPUT    /  ARAY(150,2)                                   NPUT      13
C                                                                       NPUT      14
C                                                                       CERVLS     2
C                                                                       CERVLS     3
C ***** CERVLS (COST ESTIMATING RELATIONSHIP (CER) VALUES) COMMON ****** CERVLS     4
C                                                                       CERVLS     5
C     THE CERVLS COMMON CONTAINS LOCATIONS FOR STORAGE OF THE CER       CERVLS     6
C INPUT CARD COUNT, THE ROW ID'S, THE CER EQUATION NUMBERS, THE         CERVLS     7
C ROW CROSS REFERENCE NUMBERS, THE INPUT PARAMETERS, THE ADDITION       CERVLS     8
C OR CERS CONTROL, STORAGE ARRAY FOR EQUIPMENT NAME, CER INDEX,         CERVLS     9
C AND TPUT/NPUT INDEXES FOR ALL EQUIPMENT INPUT.                        CERVLS    10
C                                                                       CERVLS    11
C      CERCT           - NUMBER OF CER'S FOR THIS PARTICULAR EQUIPMENT  CERVLS    12
C                        (1 WORD)                                       CERVLS    13
C      IFORC( )        - (F OR C) ALPHABETIC CHARACTER INDICATING       CERVLS    14
C                        'FACTOR' OR 'CER'.   (150 WORDS)               CERVLS    15
C      IROWID          - CBS ELEMENT NUMBER TO WHICH THIS CER APPLIES   CERVLS    16
C                        (150 WORDS)                                    CERVLS    17
C      IADD            - CER CONTROL FLAGS (0 THRU 6) FOR ADDITIVE      CERVLS    18
C                        CERS OR SUBELEMENTS. 0 INDICATES NO ADDING.    CERVLS    19
C                        1 THRU 6 INDICATE ADD UP SUBELEMENTS.          CERVLS    20
C                        (150 WORDS)                                    CERVLS    21
C      ICERNO          - REFERENCE NUMBER FOR CER EQUATIONS IN THE      CERVLS    22
C                        'CERCOMP' SUBROUTINE.  (150 WORDS)             CERVLS    23
C      IXREFNO         - CBS ELEMENT NUMBER USED IN CROSS REFERENCING   CERVLS    24
C                        A PREVIOUSLY COMPUTED CBS ELEMENT.  AT PRESENT CERVLS    25
C                        ONLY CER EQUATION NUMBER 8 ALLOWS CROSS        CERVLS    26
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C                       REFERENCING.   0 INDICATES NO CROSS-REF.        CERVLS     27
C                       (150 WORDS)                                     CERVLS     28
C       IXREFAD         - CER CONTROL FLAGS FOR CROSS-REFERENCING       CERVLS     29
C                         CER SUB-ELEMENTS. (150 WORDS)                 CERVLS     30
C       IFSTORE         - STORES 'FACTOR' PARAMETERS. (900 WORDS)       CERVLS     31
C       PSSTORE         - STORES NUMBERICAL PARAMETERS. (900 WORDS)     CERVLS     32
C       ICER( )         - A SINGLY-SUBSCRIPTED ARRAY CONTAINING A       CERVLS     33
C                         MAXIMUM OF 100 DATA TRIPLETS WHOSE MEMBERS    CERVLS     34
C                         ARE:                                          CERVLS     35
C         ICER(1,4,7,   - EQUIPMENT NAME                                CERVLS     36
C              ETC)                                                     CERVLS     37
C         ICER(2,5,8    - INDEX FOR MASS STORAGE UNIT 1.  INDEX         CERVLS     38
C              ETC)       BEGINS AT 1 AND INCREMENTS BY 9 (1,10,19,     CERVLS     39
C                         ETC). THE FOLLOWING DATA RECORDS ARE          CERVLS     40
C                         INDEXED:                                      CERVLS     41
C                            1   CERCT        6   IXREFNO               CERVLS     42
C                            2   IFORC        7   IXREFAD               CERVLS     43
C                            3   IROWID       8   IFSTORE               CERVLS     44
C                            4   IADD         9   PSSTORE               CERVLS     45
C                            5   ICERNO                                 CERVLS     46
C         ICER(3,6,9    - INDEX FOR MASS STORAGE UNIT 2 AND 3.          CERVLS     47
C                         INDEX BEGINS AT 18 AND INCREMENTS BY 2        CERVLS     48
C                         (18,20,22,ETC) AND IS IDENTICAL TO THE        CERVLS     49
C                         THIRD MEMBER OF DATA TRIPLET STORED IN        CERVLS     50
C                         THE IREC ARRAY.                               CERVLS     51
C       SUBELS( , )     - SUBELS IS A CROSS-HATCHED ARRAY WHICH IS      CERVLS     52
C                         RELATED ONE-TO-ONE TO THE CBS.                CERVLS     53
C                         IT IS USED LOCALLY WITHIN 'COMPCMP' AND       CERVLS     54
C                         'CERCOMP' FOR INTERIM STORAGE OF UP TO        CERVLS     55
C                         SIX SUBELEMENTS, 1 THROUPUT, AND 1 TOTAL      CERVLS     56
C                         VALUE   FOR EACH CBS ELEMENT.                 CERVLS     57
C       FACTOR( )       - A FACTOR IS A PRECURSOR OF ONE OR MORE        CERVLS     58
C                         CERS.                                         CERVLS     59
C                                                                       CERVLS     60
C                                                                       CERVLS     61
      COMMON /CERVLS/ CERCT, IFORC(150), IROWID(150), IADD(150),        CERVLS     62
     C                ICERNO(150), IXREFNO(150),IXREFAD(150),          CERVLS     63
     2                 IFSTORE(6,150),PSSTORE(6,150),ICER(300),        CERVLS     64
     C                SUBELS(8,150), FACTORS(150)                      CERVLS     65
      INTEGER CERCT                                                     CERVLS     66
C                                                                       CERVLS     67
C ********************* ROLLPCT COMMON ************************        CERVLS     68
C                                                                       CERVLS     69
C       ARRAY DEFINING THE ROLL-UP INPUT NUMBERS, TOTAL COUNT OF        ROLLPCT    2
C       COST ELEMENTS WITH SPECIFIC ROLL-UP NUMBERS TO BE OUTPUT,       ROLLPCT    3
C       ARRAY OF SELECTED WBS ELEMENTS NUMBERS, SELECTED ROLL-UP        ROLLPCT    4
C       OUTPUT FLAG                                                     ROLLPCT    5
      COMMON / ROLUPCT /  IROLL(150), ROLLTOT, ROLLSL(150), ROLLFLG     ROLLPCT    6
      INTEGER ROLLTOT, ROLLSL, ROLLFLG                                  ROLLPCT    7
C                                                                       ROLLPCT    8
C ********************* BULG COMMON ************************          ROLLPCT    9
C                                                                       ROLLPCT    10
C                                                                       CHARTS     2
C ********************CHARTS (CONTROL) COMMON ********************     CHARTS     3
C                                                                       CHARTS     4
C                                                                       CHARTS     5
C       CHRTCNT CONTAINS THE MAJOR OUTPUT CHART CONTROLS                CHARTS     6
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C                 0   - GENERATE CHART                                    CHARTS     7
C                 1   - NO GENERATION OF CHART                            CHARTS     8
C                                                                         CHARTS     9
C      CHRTCNT(1)     - IF EQUAL TO 0 - CALLS WBSOUT(1) FOR EQUIPMENT     CHARTS    10
C                       ELEMENT LIFE CYCLE COSTS - FLEET SUMMARY          CHARTS    11
C      CHRTCNT(2)     - IF EQUAL TO 0 - CALLS WBSOUT(2) FOR UNIT          CHARTS    12
C                       SHIP COSTS BY EQUIPMENT ELEMENT                   CHARTS    13
C                     - IF NE. TO 0   - CALLS WBSTOT BECAUSE              CHARTS    14
C                       WBSOUT(2) WAS NOT CALLED                          CHARTS    15
C      CHRTCNT(3)     - IF EQUAL TO 0 - CALLS WBSOUT(3) FOR SHIP          CHARTS    16
C                       CLASS SUMMARY                                     CHARTS    17
C      CHRTCNT(4)     - IF EQUAL TO 0 - CALLS BUDGUP FOR LIFE             CHARTS    18
C                       CYCLE COSTS BY BUDGET APPROPRIATIONS              CHARTS    19
C      CHRTCNT(5)     - IF NE. TO 0   - CALLS ROLCNT FOR OUTPUT BY        CHARTS    20
C                       ROLL-UP NUMBER                                    CHARTS    21
C      CHRTCNT(6)     - IF EQUAL TO 0 - LISTS THE SUBELS ARRAY            CHARTS    22
C                       FOR ENTIRE OBS FOR PROOFING                       CHARTS    23
C                                                                         CHARTS    24
C                                                                         CHARTS    25
      COMMON / CHARTS  /  CHRTCNT(15)                                     CHARTS    26
      INTEGER CHRTCNT                                                     CHARTS    27
C ********** CSTAB (EQUIPMENT QUANTITIES) COMMON ****************         CSTAB      2
C                                                                         CSTAB      3
C      QCMPT          - QUANTITY OF EQUIPMENT ALREADY DEPLOYED            CSTAB      4
C                       (O & S ) OVER ALL SHIPCLASSES (Q1) (INTEGER)      CSTAB      5
C      QCMPT2         - QUANTITY OF EQUIPMENT TO BE MANUFACTURER          CSTAB      6
C                       INSTALLED (INVESTMENT) OVER ALL SHIPCLASSES       CSTAB      7
C                       (Q2) (REAL)                                       CSTAB      8
C      CSTABLE        - SINGLY-DIMENSIONED ARRAY WHOSE MEMBERS ARE        CSTAB      9
C                       A SERIES OF)                                      CSTAB     10
C                             --SHIPCLASS NAME                            CSTAB     11
C                             --O & S QUANTITY OF EQUIPMENT FOR EACH      CSTAB     12
C                               SHIP ON A PARTICULAR SHIPCLASS            CSTAB     13
C                             --INV QUANTITY OF EQUIPMENT FOR EACH        CSTAB     14
C                               SHIP ON A PARTICULAR SHIPCLASS            CSTAB     15
C                       (THESE THREE MEMBERS ARE GIVEN FOR EACH           CSTAB     16
C                        SHIP CLASS MAKING A SERIES OF DATA TRIPLETS)     CSTAB     17
C                       (VALUES ARE INTEGER)                              CSTAB     18
C      CSTABEL        - SINGLY-DIMENSIONED ARRAY OF THE INVESTMENT        CSTAB     19
C                       QUANTITY OF EQUIPMENT FOR EACH SHIP ON A          CSTAB     20
C                       PARTICULAR SHIPCLASS. DATA ELEMENTS MUST          CSTAB     21
C                       BE STORED IN THE SAME SHIPCLASS ORDER AS          CSTAB     22
C                       CSTABLE.  THE TWO ARRAYS MAY BE THOUGHT           CSTAB     23
C                       OF AS A SERIES OF DATA QUADRUPLETS.               CSTAB     24
C                                                                         CSTAB     25
C                                                                         CSTAB     26
      COMMON /CSTAB/QCMPT(100),QCMPT2(100),CSTABLE(3750),CSTABEL(1250)    CSTAB     27
      INTEGER QCMPT,CSTABLE                                               CSTAB     28
C        GENERAL TITLE TO BE USED ON ALL CHARTS                           GENTLE     2
      COMMON / GENTLE  /  TITLE(3)                                        GENTLE     3
      INTEGER TITLE                                                       GENTLE     4
C                                                                         SHIPINS    2
C *********** MARRAY (IREC ARRAY) COMMON ******************              SHIPINS    3
C                                                                         SHIPINS    4
C                                                                         SHIPINS    5
C     THE IREC ARRAY IS A SINGLY-SUBSCRIPTED ARRAY WHOSE FIRST POSITION   SHIPINS    6
C IS THE TOTAL NUMBER OF UNIQUE SHIPCLASS/EQUIPMENT COMBINATIONS.         SHIPINS    7
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AD-A087 930 NAVAL SURFACE WEAPONS CENTER DAHLGREN VA F/G 14/1
SYSTEM AND FORCE STRUCTURE COST ANALYSIS MODEL (SAFSCAM) USER'S--ETC(U)
SEP 79 C P NELSON
UNCLASSIFIED NSWC/TR-79-250 NL

2 OF 3
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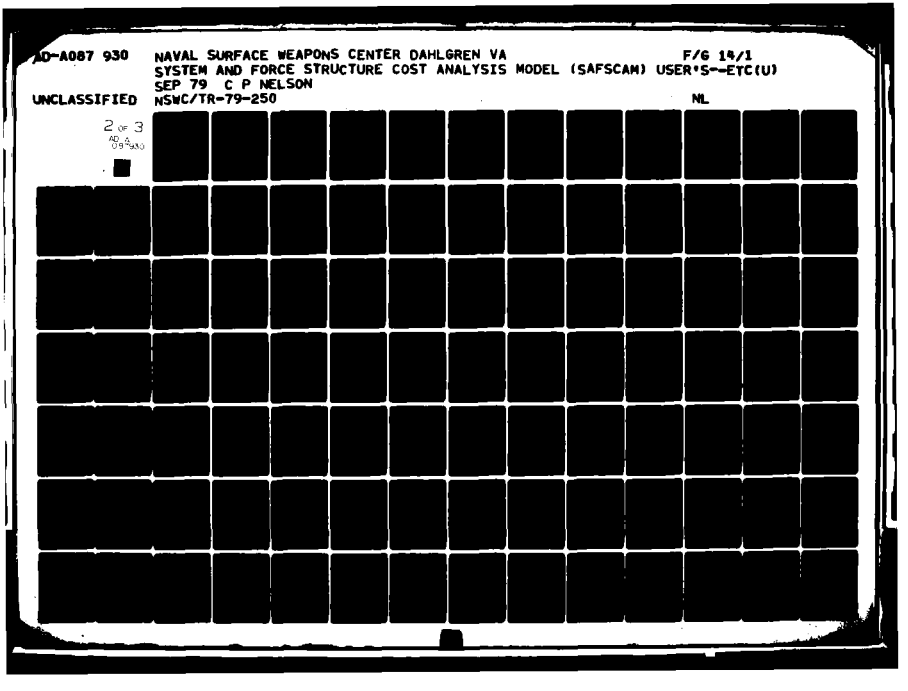

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C THE NEXT THREE POSITIONS START A SERIES OF TRIPLETS WHOSE              SHIPINS     8
C MEMBERS ARE: SHIPCLASS NAME, EQUIPMENT NAME, MS 3 INDEX.               SHIPINS     9
C      IREC(1)          - THE RUNNING SUM OF THE TOTAL NUMBER OF UNIQUE  SHIPINS    10
C                         SHIPCLASS/EQUIPMENT COMBINATION IN THE        SHIPINS    11
C                         EQUIPMENT LEVEL INPUT                         SHIPINS    12
C      IREC(2,5,8,      - THE NAME OF THE SHIP CLASS                     SHIPINS    13
C           11,ETC)                                                     SHIPINS    14
C      IREC(3,6,9       - THE NAME OF THE EQUIPMENT                      SHIPINS    15
C           12,ETC)                                                     SHIPINS    16
C      IREC(4,7,10      - INDEX FOR MASS STORAGE UNIT 3.  AN INTEGER     SHIPINS    17
C           13,ETC)       NUMBER BEGINNING A 18 AND INCREMENTING BY     SHIPINS    18
C                         2 TO FORM 18,20,22,24,ETC.  THIS INDEX IS     SHIPINS    19
C                         THE STARTING LOCATION OF A RECORD (LENGTH     SHIPINS    20
C                         "NWDS WORDS") ON MASS STORAGE 3 WHICH         SHIPINS    21
C                         CONTAINS THE UNIT COSTS OF THE EQUIPMENTS     SHIPINS    22
C                         ON A UNIT SHIP (COMPUTED BY SUBROUTINE        SHIPINS    23
C                         COMPCMP).                                     SHIPINS    24
C                                                                       SHIPINS    25
      COMMON / MARRAY / IREC(3750)                                      SHIPINS    26
C                                                                       SHIPINS    27
C **** SHIPINS (SHIP SUMMATION AND INSTALLATION TABLE) COMMON *****      SHIPINS    28
C                                                                       SHIPINS    29
C      SHIPSUM( )       - CONTAINS THE TOTAL NUMBER OF UNIT SHIPS FOR    SHIPINS    30
C                         EACH SHIP CLASS FOUND BY INSPECTION OF        SHIPINS    31
C                         THE SHIP INSTALLATION TABLE                   SHIPINS    32
C      SINSTB( , )      - THE SHIP DEPLOYMENT/INSTALLATION SCHEDULE      SHIPINS    33
C                         TABLE. FOR EACH SHIP CLASS:                   SHIPINS    34
C                            SINSTB(X,1)   - SHIP CLASS NAME            SHIPINS    35
C                            SINSTB(X,2-7) - THE YEARLY NUMBERS OF      SHIPINS    36
C                                  UNIT SHIPS OF THIS CLASS TO BE       SHIPINS    37
C                                  DEPLOYED/INSTALLED                   SHIPINS    38
C      SHIPSM( )        - THE TOTAL NUMBER OF UNIT SHIPS FOR EACH        SHIPINS    39
C                         SHIP CLASS.  IT IS THE SAME COUNT AS          SHIPINS    40
C                         SHIPSUM, HOWEVER, IT IS DEFINED IN A          SHIPINS    41
C                         SPECIFIC ORDER AFTER ERROR-CHECKING IN        SHIPINS    42
C                         SLCCM'S NESTED DO-LOOPS WHICH                 SHIPINS    43
C                         DETERMINE THE TOTAL COSTS BY SHIP CLASS       SHIPINS    44
C                                                                       SHIPINS    45
      COMMON / SHIPINS / SHIPSUM(43), SINSTB(43,7), SHIPSM(43)          SHIPINS    46
      INTEGER SHIPSUM, SINSTB, SHIPSM                                   SHIPINS    47
C                                                                       SYST       2
C ********************** NAMES COMMON ***************************      SYST       3
C                                                                       SYST       4
C      NMSYS            - NAME OF THE SYSTEM                           SYST       5
C      NOSUB            - TOTAL NUMBER OF SHIPCLASSES CONSIDERED       SYST       6
C      NMSUB( , )       - NAME OF THE SHIPCLASS IN TWO WORDS           SYST       7
C      NOCOMP( )        - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)     SYST       8
C                         (RUNNING TOTAL FOR EQUIPMENTS)                SYST       9
C      NMCOMP( , , )    - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES      SYST      10
C                         IN WBSOUT (INDEXED BY EQUIPMENT NUMBER        SYST      11
C                         AND SHIPCLASS NUMBER)                         SYST      12
C      NAMESC( , )      - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)    SYST      13
C                         FOR EQUIPMENT QUANTITIES TABLE - FLEET        SYST      14
C                         SUMMARY                                       SYST      15
C      EQUI             - PRESENT EQUIPMENT (BEING PROCESSED)          SYST      16
C      SHIPNP           - PRESENT SHIPCLASS (BEING PROCESSED)          SYST      17
C                                                                       SYST      18
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C                                                                       SYST
      COMMON / NAMES   /  NMSYS, NOSUB, NMSUB(2,43), NCCOMP(43),        SYST
     1         NMCOMP(2,100,43),NAMESC(100,2),EQUI,SHIPNM               SYST
      INTEGER EQUI,SHIPNM                                               SYST
C ****************MISC (MISCELLANEOUS) COMMON *******************       SYST
C                                                                       SYST
C      NAP              - COUNT OF DIFFERENT APPROPRIATION CODES        SYST
C      APPRO( )         - APPROPRIATION CODE NAMES                      SYST
C      SPCL( , )        - PERCENTAGES FOR CBS ELEMENT COST SPLITS       SYST
C      NPH              - COUNT OF THE LIFE CYCLE PHASES                SYST
C      IPH( )           - FIRST CBS ELEMENT NUMBER OF EACH PHASE        SYST
C      IPB( )           - CBS ELEMENT NUMBER FOR PAGE BREAKS            SYST
C                         (LAST CBS NUMBER FOR THE PAGE)                SYST
C      IPHASE( , )      - TITLES OF CBS PHASES                          SYST
C      FLEETZ           - FLEET (SYSTEM) SIZE                           SYST
C      NROLL( )         - LOWEST COST ELEMENT LEVEL TO BE PRINTED       SYST
C                         (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)   SYST
C      RDTCT            - TOTAL RDT&E COST                              SYST
C      TOTINV           - TOTAL INVESTMENT COST MINUS TOTAL RIPOUT      SYST
C      TOTRIP           - TOTAL RIPOUT COST                             SYST
C      SMISRD           - MISSILE RDT&E COST                            SYST
C      NOFLY            - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN      SYST
C                         FLYAWAY COSTS                                 SYST
C      IFLYROW( )       - CBS ELEMENT NUMBER FOR FLYAWAY COSTS          SYST
C      NOYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE    SYST
C      IYEARS           - YEARS COVERED BY THE SHIP INSTALLATION TABLE  SYST
C      IYRS             - NUMBER OF YEARS IN SHIP INSTALLATION TABLE    SYST
C                         PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE) SYST
C      FNOTES( , )      - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS   SYST
C                                                                       SYST
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),       SYST
     1         IPHASE(2,4),FLEETZ,NROLL(4),RDTOT,TOTINV,TOTRIP,         SYST
     2         SMISRD,NOFLY,IFLYROW(25),NOYRS,IYEARS(12),IYRS,          SYST
     3         FNOTES(5,12)                                             SYST
      INTEGER APPRO,SPCL,FLEETZ                                         SYST
C                                                                       SYST
      DIMENSION IDUMMY(10)                                              DATAOP
      DIMENSION NMDUM(43)                                               DATACP
      REAL IDUMMY                                                       DATAOP
      INTEGER CERCTX6                                                   DATAOP
      DIMENSION FMT1100(3),FMT1191(3)                                   DATACP
      INTEGER FMT1100,FMT1191                                           DATACP
C        OUTPUT COST ELEMENT DESCRIPTIONS                               DATAOP
      KZERO = 1H0                                                       DATACP
      KONE  = 1H1                                                       DATACP
      CALL HEAD                                                         DATACP
      WRITE (6,1001) KZERO                                              DATAOP
      WRITE (6,1000) KZERO                                              DATACP
      IROLLID = 0                                                       DATAOP
      INDEX = 1                                                         DATACP
      MDPR = LENR/5                                                     DATAOP
      LITMUS = 1                                                        DATACP
      DO 20 I=1,5                                                       DATAOP
      CALL REACMS (2,ARAY,LENR,INDEX+I)                                 DATAOP
      DO 20 J=1,MDPR                                                    DATACP
      INDXL = J*5                                                       DATAOP
      INDXF = INDXL-4                                                   DATACP
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      NO = (I-1)*MDPR + J                                               DATAOP
      IROLLID = IROLLID + 1                                             DATAOP
      WRITE (6,1010) NO, (ARAY(K), K=INDXF,INDXL), IROLL(IROLLID)       DATAOP
      IF ((I-1)*MDPR+J.GE.NWBS) GO TO 30                                DATAOP
C                                                                       DATAOP
C PERFORM THE LITMUS TEST; IF TRUE, WRITE PHASE-BREAK PAGE HEADING      DATAOP
C                                                                       DATAOP
      IF (LITMUS.GT.3) GO TO 20                                         DATAOP
      IF (((I-1)*MDPR + J) .EQ. IPB(LITMUS)) GO TO 10                   DATAOP
      GO TO 20                                                          DATAOP
   10 LITMUS = LITMUS + 1                                               DATAOP
      WRITE (6,1000) KONE                                               DATAOP
   20 CONTINUE                                                          DATAOP
C        OUTPUT SYSTEM DATA                                             DATAOP
   30 INDEX = 6                                                         DATAOP
      MDPR = MDPR/2                                                     DATAOP
C                                                                       DATAOP
C     OUTPUT SHIP CLASS/EQUIPMENT DATA                                  DATAOP
C                                                                       DATAOP
C      NCT            - NCT IS THE TOTAL NUMBER OF VALUES STORED IN THE DATAOP
C                       "IREC" ARRAY                                    DATAOP
C      ISUBCER        - ISUBCER IS A LOCATION COUNTER FOR GETTING VALUES DATAOP
C                       IN THE "ICER" ARRAY                             DATAOP
 4040 CONTINUE                                                          DATAOP
      NCT = IREC(1) * 3                                                 DATAOP
      ISUBCER = 1                                                       DATAOP
      ISNC = 1                                                          DATAOP
C                                                                       DATAOP
C PRINT ALL TPUT NPUT, & CER INPUT (FROM MS UNITS) BY EQUIPMENT         DATAOP
C                                                                       DATAOP
      DO 75 I=1,ICCTR                                                   DATAOP
C                                                                       DATAOP
C     GET ALL THE SHIP CLASS NAMES THAT THIS EQUIPMENT IS ON            DATAOP
      ICOUNT = 0                                                        DATAOP
      DO 41 II=3,NCT,3                                                  DATAOP
      IF ( ICER(ISUBCER) .NE. IREC(II) ) GO TO 41                       DATAOP
      ICOUNT = ICOUNT + 1                                               DATAOP
      NMDUM(ICOUNT) = IREC(II-1)                                        DATAOP
      INDEX = IREC(II+1)                                                DATAOP
   41 CONTINUE                                                          DATAOP
C                                                                       DATAOP
C WRITE A HEADING LINE WITH THE EQUIPMENT NAME & ITS SHIP CLASS NAMES   DATAOP
C                                                                       DATAOP
      WRITE (6,1040) NAMESC(ISNC,1),NAMESC(ISNC,2),(NMDUM(K),K=1,ICCUNT) DATAOP
      IPUT = 10HTHROUGHPUT                                              DATAOP
      WRITE (6,1050) IPUT                                               DATAOP
      CALL READMS (2,ARAY,LENR,INDEX)                                   DATAOP
      DO 50 J=1,MDPR                                                    DATAOP
      INDXL = J*10                                                      DATAOP
      INDXF = INDXL-9                                                   DATAOP
      ISUBDUM = 0                                                       DATAOP
      DO 45 IDUM=INDXF,INDXL                                            DATAOP
      ISUBDUM = ISUBDUM + 1                                             DATAOP
      IF ( ARAY(IDUM) .NE. 0 ) GO TO 42                                 DATAOP
      IDUMMY(ISUBDUM) = 10H                                             DATAOP
      GO TO 45                                                          DATAOP
   42 CONTINUE                                                          DATAOP
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      SUBROUTINE DATAOP     74/74   OPT=2                FTN 4.6+433        07/31/79  23.53.41

                  IDUMMY(ISUBDUM) = ARAY(IDUM)                                          DATAOP     91
                45 CONTINUE                                                             DATAOP     92
345               50 WRITE (6,1030) INDXF, INDXL, (IDUMMY(K), K=1,ISUBDUM)              DATAOP     93
            C                                                                           DATAOP     94
            C     GET EQUIPMENT RAW CER DATA FROM MASS STORAGE UNIT 8                   DATAOP     95
            C                                                                           DATAOP     96
                  INDCER = ICER(ISUBCER+1)                                              DATAOP     97
350               CALL READMS ( 8, CERCT, 1, INDCER )                                   DATAOP     98
                  IF (CERCT.GT.0) GO TO 61                                              DATAOP     99
                  GO TO 65                                                              DATAOP    100
                61 CONTINUE                                                             DATAOP    101
                  IPUT = 10HCER INPUT                                                   DATAOP    102
355               WRITE (6,1070) IPUT                                                   DATAOP    103
                  CERCTX6 = CERCT * 6                                                   DATAOP    104
                  CALL READMS (8,IFORC  ,CERCT  ,INDCER+1)                              DATAOP    105
                  CALL READMS (8,IRCWID ,CERCT  ,INDCER+2)                              DATAOP    106
                  CALL READMS (8,IADD   ,CERCT  ,INDCER+3)                              DATAOP    107
360               CALL READMS (8,ICERNO ,CERCT  ,INDCER+4)                              DATAOP    108
                  CALL READMS (8,IXREFNO,CERCT  ,INDCER+5)                              DATAOP    109
                  CALL READMS (8,IXREFAD,CERCT  ,INDCER+6)                              DATAOP    110
                  CALL READMS (8,IFSTORE,CERCTX6,INDCER+7)                              DATAOP    111
                  CALL READMS (8,PSSTORE,CERCTX6,INDCER+8)                              DATAOP    112
365               WRITE (6,1084) (K2,K2=1,6)                                            DATAOP    113
            C                                                                           DATAOP    114
            C     WRITE AN OUTPUT DETAIL LINE FOR EACH CER FOR THIS EQUIPMENT           DATAOP    115
            C                                                                           DATAOP    116
                  DO 62 K=1,CERCT                                                       DATAOP    117
370               WRITE (6,1085) IFORC(K),IRCWID(K),IADD(K),ICERNO(K),                  DATAOP    118
                 C IXREFNO(K),IXREFAD(K),(IFSTORE(K1,K),PSSTORE(K1,K),K1=1,6)         DATAOP    119
                62 CONTINUE                                                             DATAOP    120
                65 CONTINUE                                                             DATAOP    121
                  ISUBCER = ISUBCER + 3                                                 DATAOP    122
375               ISNC = ISNC + 1                                                       DATAOP    123
                75 CONTINUE                                                             DATAOP    124
            C                                                                           DATAOP    125
            C                 OUTPUT SHIP INSTALLATION SCHEDULE                         DATAOP    126
            C                                                                           DATAOP    127
380               CALL HEAD                                                             DATAOP    128
                  WRITE (6,1090) FLEETZ                                                 DATAOP    129
                  ITOTAL = 5HTOTAL                                                      DATAOP    130
                  ISPACE = (136 - ((IYRS*8) + 10))/2                                    DATAOP    131
                  ISPAC1 = ISPACE + 15                                                  DATAOP    132
385            1191 FORMAT(4H(1HO,I2,2HX,,I2,11H(I4,4X),A5))                            DATAOP    133
                  ENCODE(30,1191,FMT1191) ISPAC1,NOYRS                                  DATAOP    134
                  WRITE(6,FMT1191) (IYEARS(I),I=1,NOYRS),ITOTAL                         DATAOP    135
390            1100 FORMAT(4H(1HO,I2,9HX,A6,4X,,I2,3HI8))                               DATAOP    136
                  ENCODE(30,1100,FMT1100) ISPACE,IYRS                                   DATAOP    137
                  DO 80 I=1,NOSUB                                                       DATAOP    138
395               WRITE(6,FMT1100) (SINSTB(I,K),K=1,IYRS),SHIPSUM(I)                    DATAOP    139
                80 CONTINUE                                                             DATAOP    140
            C                                                                           DATAOP    141
            C                 OUTPUT EQUIPMENT SCHEDULE PER SHIP                        DATAOP    142
            C                                                                           DATAOP    143
                  CALL HEAD                                                             DATAOP    144
                  WRITE (6,1110)                                                        DATAOP    145
                  NCT = 2                                                               DATAOP    146
                  NCTBY3 = 3                                                            DATAOP    147
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```
      NCTBY1 = 1
C
      DO 120 I=1,NOSUB
      NCOMP = NCLOMP(I)
      WRITE (6,1120) IREC(NCT)
      KARAK = 1H+
C
      DO 110 J=1,NCOMP
      WRITE (6,1140) KARAK,IREC(NCT+1),CSTABLE(NCTBY3),CSTABEL(NCTBY1)
      NCT = NCT + 3
      NCTBY3 = NCTBY3 + 3
      NCTBY1 = NCTBY1 + 1
      KARAK = 1H
  110 CONTINUE
  120 CONTINUE
      CALL HEAD
      WRITE(6,1003) KZERO,NOFLY
 1003 FORMAT(A1,6X,*LISTING OF THE *,I3,* COST ELEMENTS INCLUDED IN FLYA
     1WAY COSTS*)
      WRITE(6,1004) KZERO,(IFLYROW(N),N=1,NOFLY)
 1004 FORMAT(A1,9X,14I5)
 1000 FORMAT (A1,9X,*APPRO     CODE      COST ELEMENT*,35X,*ROLLUP* / )
 1001 FORMAT (A1,*FORMATTED LISTING OF INPUT FILE FROM "DATAOP"*)
 1010 FORMAT ( 10X, I5, 5X, 5A10, I10 )
 1020 FORMAT (1H1,9X,*SYSTEM INPUT DATA*//
     *        3X,*INDEX*,8X,*1*,11X,*2*,11X,*3*,11X,*4*,11X,*5*,11X,*6*,
     * 11X,*7*,11X,*8*,11X,*9*,11X,*0*/)
 1030 FORMAT (1X,I4,*-*,I4,10(2X,A10))
 1040 FORMAT(1H1,A7,1X,A7,* IS OPERATED ON SHIP CLASSES*,10(3X,A6)/
     C        (43X,10(3X,A6)))
 1050 FORMAT (*-*,A10   /   1X,10H----------   /
     *        3X,*INDEX*,4X,*1*,11X,*2*,11X,*3*,11X,*4*,11X,*5*,11X,*6*,
     *        11X,*7*,11X,*8*,11X,*9*,10X,*10* / )
 1060 FORMAT (///)
 1070 FORMAT (*-*,A10   /   1X,10H----------)
 1084 FORMAT(19H0F  CBS   CER  CES   ,6(5X,*PARAMETER #*,I2) /
     1        19H C  ROW   NO. XREF   ,6(5X,*(F  = FACTOR)*)/)
 1085 FORMAT (1X,A1,I4,I2,I5,I4,I2,6(5X,A1,1PG12.6))
 1090 FORMAT(1H-,42X,*SHIP INSTALLATION SCHEDULE - *,
     1*BASED ON*,I4,* SHIP FLEET*)
 1110 FORMAT(1H-,51X,*EQUIPMENT ELEMENTS PER SHIP*/
     1 1H0,52X,*EQUIPMENT*,5X,*OPERATIONAL*,5X,*INVESTMENT*/
     2 37X,*SHIP CLASS*,6X,*ELEMENT*,7X,*QUANTITY*,8X,*QUANTITY*)
 1120 FORMAT (1H0,36X,A6)
 1140 FORMAT (A1,53X,A6,I12,F18.2)
      RETURN
C
C SECOND CALL OF DATAOP PRINTS FLEET TOTAL EQUIPMENT REQUIREMENTS
C
      ENTRY DATOP1
      CALL HEAD
      WRITE (6,1160) FLEETZ
      DO 130 I=1,ICCTR
      WRITE (6,1170) NAMESC(I,1),NAMESC(I,2),QCMPT(I),QCMPT2(I)
  130 CONTINUE
 1160 FORMAT(1H+,42X,*EQUIPMENT ELEMENT QUANTITES - *,I3,* SHIP FLEET SU
     2MMARY*/1H0,42X,*EQUIPMENT*,14X,*OPERATIONAL*,10X,*INVESTMENT*/
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SUBROUTINE DATAOP     74/74   OPT=2                    FTN 4.6+433        07/31/79  23.53.41

     3 43X,*ELEMENT*,16X,*QUANTITY*,13X,*QUANTITY*)                        DATAOP    205
1170 FORMAT (1H0,38X,2(1X,A7),10X,I7,13X,F10.2)                            DATAOP    206
     RETURN                                                                DATAOP    207
     END                                                                   DATAOP    208
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      FUNCTION ICOMP(ISUB)                                              ICOMP     2
C                                                                       SYST      2
C ********************** NAMES COMMON ***************************       SYST      3
C                                                                       SYST      4
C      NMSYS          - NAME OF THE SYSTEM                              SYST      5
C      NOSUB          - TOTAL NUMBER OF SHIPCLASSES CONSIDERED          SYST      6
C      NMSUB( , )     - NAME OF THE SHIPCLASS IN TWO WORDS              SYST      7
C      NOCOMP( )      - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)        SYST      8
C                       (RUNNING TOTAL FOR EQUIPMENTS)                  SYST      9
C      NMCOMP( , , )  - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES         SYST     10
C                       IN WBSOUT (INDEXED BY EQUIPMENT NUMBER          SYST     11
C                       AND SHIPCLASS NUMBER)                           SYST     12
C      NAMESC( , )    - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)       SYST     13
C                       FOR EQUIPMENT QUANTITIES TABLE - FLEET          SYST     14
C                       SUMMARY                                         SYST     15
C      EQUI           - PRESENT EQUIPMENT (BEING PROCESSED)             SYST     16
C      SHIPNM         - PRESENT SHIPCLASS (BEING PROCESSED)             SYST     17
C                                                                       SYST     18
C                                                                       SYST     19
      COMMON / NAMES   /  NMSYS, NOSUB, NMSUB(2,43), NOCOMP(43),        SYST     20
     1         NMCOMP(2,100,43),NAMESC(100,2),EQUI,SHIPNM               SYST     21
      INTEGER EQUI,SHIPNM                                               SYST     22
C ****************MISC (MISCELLANEOUS) COMMON ******************        SYST     23
C                                                                       SYST     24
C      NAP            - COUNT OF DIFFERENT APPROPRIATION CODES          SYST     25
C      APPRO( )       - APPROPRIATION CODE NAMES                        SYST     26
C      SPCL( , )      - PERCENTAGES FOR CBS ELEMENT COST SPLITS         SYST     27
C      NPH            - COUNT OF THE LIFE CYCLE PHASES                  SYST     28
C      IPH( )         - FIRST CBS ELEMENT NUMBER OF EACH PHASE          SYST     29
C      IPB( )         - CBS ELEMENT NUMBER FOR PAGE BREAKS              SYST     30
C                       (LAST CBS NUMBER FOR THE PAGE)                  SYST     31
C      IPHASE( , )    - TITLES OF CBS PHASES                            SYST     32
C      FLEETZ         - FLEET (SYSTEM) SIZE                             SYST     33
C      NROLL( )       - LOWEST COST ELEMENT LEVEL TO BE PRINTED         SYST     34
C                       (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)     SYST     35
C      ROTOT          - TOTAL ROT&E COST                                SYST     36
C      TOTINV         - TOTAL INVESTMENT COST MINUS TOTAL RIFOUT        SYST     37
C      TOTRIP         - TOTAL RIFOUT COST                               SYST     38
C      SMISRD         - MISSILE ROT&E COST                              SYST     39
C      NOFLY          - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN        SYST     40
C                       FLYAWAY COSTS                                   SYST     41
C      IFLYROW( )     - CBS ELEMENT NUMBER FOR FLYAWAY COSTS            SYST     42
C      NOYRS          - NUMBER OF YEARS IN SHIP INSTALLATION TABLE      SYST     43
C      IYEARS         - YEARS COVERED BY THE SHIP INSTALLATION TABLE    SYST     44
C      IYRS           - NUMBER OF YEARS IN SHIP INSTALLATION TABLE      SYST     45
C                       PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE) SYST     46
C      FNOTES( , )    - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS     SYST     47
C                                                                       SYST     48
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),       SYST     49
     1         IPHASE(2,4),FLEETZ,NROLL(4),ROTOT,TOTINV,TOTRIP,         SYST     50
     2         SMISRD,NOFLY,IFLYROW(25),NOYRS,IYEARS(12),IYRS,          SYST     51
     3         FNOTES(5,12)                                             SYST     52
      INTEGER APPRO,SPCL,FLEETZ                                         SYST     53
C                                                                       SYST     54
      NCP = 1                                                           ICOMP     4
      IF (ISUB.EQ.1) GO TO 40                                           ICOMP     5
      IS = ISUB-1                                                       ICOMP     6
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      FUNCTION ICOMP       74/74   OPT=2                FTN 4.6+433      07/31/79  23.53.41

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      SUBROUTINE REFMT (IWORD,(WORD,NWDS,ISHIFT)
      DIMENSION IWORD(1)
      INTEGER EQUI,TEMP(20),OWORD(1)
      NCHARS = 10*NWDS
      EQUI = 10H
      COMP1 = EQUI
      INC = 0
      IBK = 1
      DO 5 I=1,NCHARS
    5 TEMP(I) = 10H
      DO 30 I=1,NWDS
      DO 30 J=1,10
      CALL MOVE (IWORD(I),J,EQUI,1,1)
      IF ( EQUI.NE.1H ) GO TO 10
      IF (IBK.EQ.1) GO TO 30
      IBK = 1
      GO TO 20
   10 IBK = 0
   20 INC = INC+1
      CALL MOVE (EQUI,1,TEMP(INC),1,1)
   30 CONTINUE
      IF (IBK.EQ.1) INC=INC-1
      IF ( INC .EQ. -1 ) GO TO 40
      ISKIP = 0
      IF (ISHIFT.EQ.1HC) ISKIP = (NCHARS-INC)/2
      IF (ISHIFT.EQ.1HR) ISKIP = NCHARS-INC
      ENCODE (10,100,IFMT) ISKIP,INC
  100 FORMAT (1H(,I2,2HX,,I2,3HA1))
      ENCODE (NCHARS,IFMT,OWORD) (TEMP(I),I=1,INC)
      RETURN
C
C                 A BLANK WORD HAS BEEN FOUND RETURN A BLANK
   40 CONTINUE
C
      DO 50 I=1,NWDS
      OWORD(I) = COMP1
   50 CONTINUE
      RETURN
      END
```

MOVE.2 COMPASS 1.3-42. 07/31/79 23.54.37.
STORAGE ALLOCATION.

ADDRESS	LENGTH	BINARY CONTROL CARDS.
0	54	IDENT MOVE.2
54		ENC

ENTRY POINTS.

MOVE 1+

```
                                        IDENT  MOVE.2                                                    MOVE      2
                                *       AUTHOR: T. HARRIS                                                MOVE      3
                                *       DATE: 4Q74                                                       MOVE      4
                                *                                                                        MOVE      5
                                *       MOVE --- MOVES NOCHAR"S FROM INPUT ADDRESS AWORD+ACHAR           MOVE      6
                                *                TO OUTPUT ADDRESS BWORD+BCHAR.                          MOVE      7
                                *                                                                        MOVE      8
                                *       CALLING SEQUENCE:CALL MOVE (AWORD,ACHAR,BWORD,BCHAR,NOCHAR)      MOVE      9
                                *                                                                        MOVE     10
                                        ENTRY  MOVE                                                      MOVE     11
  0  15172605555555000001 +               VFD    42/7LMOVE    ,18/MOVE                                    MOVE     12
  1                     1       MOVE     BSSZ   1B                                                        MOVE     13
  2  6110000001                          SB1    1                                                         MOVE     14
                66200                    SB2    B0                                                        MOVE     15
  3  10011                      MOVE1    BX0    X1                                                        MOVE     16
          54111                          SA1    A1+B1                                                     MOVE     17
                0331000005 +             NG     X1,MOVE2                                                  MOVE     18
  4  53210                               SA2    X1                                                        MOVE     19
          0400000006 +                   EQ     MOVE3                                                     MOVE     20
  5  01421                      MOVE2    RX2    X1                                                        MOVE     21
  6  7130000012                 MOVE3    SX3    10                                                        MOVE     22
                27403                    PX4    B0,X3                                                     MOVE     23
                      24504              NX5    B0,X4                                                     MOVE     24
  7  27312                               PX3    B0,X2                                                     MOVE     25
          44435                          FX4    X3/X5                                                     MOVE     26
                26544                    UX5    B4,X4                                                     MOVE     27
                      22345              LX3    B4,X5                                                     MOVE     28
 10  36433                               IX4    X3+X3                                                     MOVE     29
          10533                          BX5    X3                                                        MOVE     30
                20503                    LX5    3                                                         MOVE     31
                      36554              IX5    X5+X4                                                     MOVE     32
 11  37425                               IX4    X2-X5                                                     MOVE     33
          0314000013 +                   NZ     X4,MOVE3A                                                 MOVE     34
                      76510              SX5    B1                                                        MOVE     35
 12  37335                               IX3    X3-X5                                                     MOVE     36
          7140000012                     SX4    10                                                        MOVE     37
 13  0520000017 +               MOVE3A   NE     B2,B0,MOVE4                                               MOVE     38
                10600                    BX6    X0                                                        MOVE     39
                      10744              BX7    X4                                                        MOVE     40
 14  20402                               LX4    2                                                         MOVE     41
          36277                          IX2    X7+X7                                                     MOVE     42
                36542                    IX5    X4+X2                                                     MOVE     43
                      63550              SB5    X5                                                        MOVE     44
 15  54111                               SA1    A1+B1                                                     MOVE     45
          66210                          SB2    B1                                                        MOVE     46
                10733                    BX7    X3                                                        MOVE     47
 16  0400000003 +                        EQ     MOVE1                                                     MOVE     48
 17  10200                      MOVE4    BX2    X0                                                        MOVE     49
          10166                          BX1    X6                                                        MOVE     50
                10077                    BX0    X7                                                        MOVE     51
                      10733              BX7    X3                                                        MOVE     52
 20  10644                               BX6    X4                                                        MOVE     53
          20402                          LX4    2                                                         MOVE     54
                36366                    IX3    X6+X6                                                     MOVE     55
                      36543              IX5    X4+X3                                                     MOVE     56
 21  6170000074                          SB7    60                                                        MOVE     57
                63650                    SB6    X5                                                        MOVE     58
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                    67676          SB6   B7-B6                                  MOVE   59
22  54311                          SA3   A1+B1                                  MOVE   60
          0333000024 +             NG    X3,MOVE5                               MOVE   61
                    53430          SA4   X3                                     MOVE   62
23  0400000025 +                   EQ    MOVE6                                  MOVE   63
24  01443                  MOVE5   RX4   X3                                     MOVE   64
25  63340                  MOVE6   SB3   X4                                     MOVE   65
          43306                    MX3   6                                      MOVE   66
                66200              SB2   B0                                     MOVE   67
                    20306          LX3   6                                      MOVE   68
26  6140000006                     SB4   6                                      MOVE   69
                0331000030 +       NG    X1,MOVE7                               MOVE   70
27  36110                          IX1   X1+X0                                  MOVE   71
          53410                    SA4   X1                                     MOVE   72
                0400000032 +       EQ    MOVE8                                  MOVE   73
30  43401                  MOVE7   MX4   1                                      MOVE   74
          15114                    BX1   -X4*X1                                 MOVE   75
                36110              IX1   X1+X0                                  MOVE   76
                    12141          BX1   X4+X1                                  MOVE   77
31  01441                          RX4   X1                                     MOVE   78
32  0332000034 +           MOVE8   NG    X2,MOVE9                               MOVE   79
                36227              IX2   X2+X7                                  MOVE   80
                    53520          SA5   X2                                     MOVE   81
33  22454                          LX4   B5,X4                                  MOVE   82
          0400000036 +             EQ    MOVE10                                 MOVE   83
34  43501                  MOVE9   MX5   1                                      MOVE   84
          15225                    BX2   -X5*X2                                 MOVE   85
                36227              IX2   X2+X7                                  MOVE   86
                    12252          BX2   X5+X2                                  MOVE   87
35  01452                          RX5   X2                                     MOVE   88
          22454                    LX4   B5,X4                                  MOVE   89
36  11634                  MOVE10  BX6   X3*X4                                  MOVE   90
          22666                    LX6   B6,X6                                  MOVE   91
                22063              LX0   B6,X3                                  MOVE   92
                    15550          BX5   -X0*X5                                 MOVE   93
37  12556                          BX5   X5+X6                                  MOVE   94
          66554                    SB5   B5+B4                                  MOVE   95
                0675000044 +       GE    B7,B5,MOVE12                           MOVE   96
40  76010                          SX0   B1                                     MOVE   97
          66540                    SB5   B4                                     MOVE   98
                0331000042 +       NG    X1,MOVE11                              MOVE   99
41  36110                          IX1   X1+X0                                  MOVE  100
          53410                    SA4   X1                                     MOVE  101
                0400000044 +       EQ    MOVE12                                 MOVE  102
42  43401                  MOVE11  MX4   1                                      MOVE  103
          15114                    BX1   -X4*X1                                 MOVE  104
                36110              IX1   X1+X0                                  MOVE  105
                    12141          BX1   X4+X1                                  MOVE  106
43  01441                          RX4   X1                                     MOVE  107
44  67664                  MOVE12  SB6   B6-B4                                  MOVE  108
          0660000052 +             GE    B6,B0,MOVE16                           MOVE  109
45  10655                  MOVE13  BX6   X5                                     MOVE  110
          67674                    SB6   B7-B4                                  MOVE  111
                0332000047 +       NG    X2,MOVE14                              MOVE  112
46  54650                          SA6   A5                                     MOVE  113
          54551                    SA5   A5+B1                                  MOVE  114
                0400000051 +       EQ    MOVE15                                 MOVE  115
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47  76710                  MOVE14   SX7    B1                                  MOVE    116
        01562                       WX6    X2                                  MOVE    117
            43501                   MX5    1                                   MOVE    118
                15225               BX2    -X5*X2                              MOVE    119
50  36227                           IX2    X2+X7                               MOVE    120
        12252                       BX2    X5+X2                               MOVE    121
            01452                   PX5    X2                                  MOVE    122
51  0410000001 +           MOVE15   EQ     B1,B0,MOVE                          MOVE    123
52  66221                  MOVE16   SB2    B2+B1                               MOVE    124
        20406                       LX4    6                                   MOVE    125
            0723000036 +            LT     B2,B3,MOVE10                        MOVE    126
53  66100                           SB1    B0                                  MOVE    127
        0400000045 +                EQ     MOVE13                              MOVE    128
54                                  END                                        MOVE    129

              500006 CM  STORAGE USED          128 STATEMENTS      16 SYMBOLS
                         MODEL 74 ASSEMBLY     1.058 SECONDS       40 REFERENCES
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SYMBOLIC REFERENCE TABLE.

MOVE	1	PROGRAM*	2/10 E	2/11	2/12 L	4/18
MOVE1	3	PROGRAM*	2/15 L	2/47		
MOVE10	36	PROGRAM*	3/25	3/32 L	4/11	
MOVE11	42	PROGRAM*	3/41	3/45 L		
MOVE12	44	PROGRAM*	3/38	3/44	3/50 L	
MOVE13	45	PROGRAM*	3/52 L	4/13		
MOVE14	47	PROGRAM*	3/54	4/01 L		
MOVE15	51	PROGRAM*	3/57	4/08 L		
MOVE16	52	PROGRAM*	3/51	4/09 L		
MOVE2	5	PROGRAM*	2/17	2/20 L		
MOVE3	6	PROGRAM*	2/19	2/21 L		
MOVE3A	13	PROGRAM*	2/33	2/37 L		
MOVE4	17	PROGRAM*	2/37	2/46 L		
MOVE5	24	PROGRAM*	3/03	3/06 L		
MOVE6	25	PROGRAM*	3/05	3/07 L		
MOVE7	30	PROGRAM*	3/12	3/16 L		
MOVE8	32	PROGRAM*	3/15	3/21 L		
MOVE9	34	PROGRAM*	3/21	3/26 L		

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      SUBROUTINE COMPCMP (I9,NOXMS,NOXCER,QQUAN,Q2)                     COMPCMP    2
C*                                                                      COMPCMP    3
C          THIS ROUTINE COMPUTES THE LIFE CYCLE COST PER COMPONENT      COMPCMP    4
C*         INDEPENDENT OF SHIP CLASS, FOR ONE UNIT                      COMPCMP    5
C*         OF ANY EBS COMPONENT OVER ALL SHIP CLASSES                   COMPCMP    6
C*                                                                      COMPCMP    7
C                                                                       COMPCMP    8
C                                                                       SYST       2
C ********************** NAMES COMMON ***************************       SYST       3
C                                                                       SYST       4
C      NMSYS           - NAME OF THE SYSTEM                             SYST       5
C      NOSUB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED         SYST       6
C      NMSUB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS             SYST       7
C      NOCOMP( )       - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)       SYST       8
C                        (RUNNING TOTAL FOR EQUIPMENTS)                  SYST       9
C      NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES        SYST      10
C                        IN WBSOUT (INDEXED BY EQUIPMENT NUMBER         SYST      11
C                        AND SHIPCLASS NUMBER)                          SYST      12
C      NAMESC( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)      SYST      13
C                        FOR EQUIPMENT QUANTITIES TABLE - FLEET         SYST      14
C                        SUMMARY                                        SYST      15
C      EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)            SYST      16
C      SHIPNM          - PRESENT SHIPCLASS (BEING PROCESSED)            SYST      17
C                                                                       SYST      18
C                                                                       SYST      19
      COMMON / NAMES   /  NMSYS, NOSUB, NMSUB(2,43), NOCOMP(43),        SYST      20
     1         NMCOMP(2,100,43),NAMESC(100,2),EQUI,SHIPNM               SYST      21
      INTEGER EQUI,SHIPNM                                               SYST      22
C ****************MISC (MISCELLANEOUS) COMMON ******************        SYST      23
C                                                                       SYST      24
C      NAP             - COUNT OF DIFFERENT APPROPRIATION CODES         SYST      25
C      APPRO( )        - APPROPRIATION CODE NAMES                       SYST      26
C      SPCL( , )       - PERCENTAGES FOR CBS ELEMENT COST SPLITS        SYST      27
C      NPH             - COUNT OF THE LIFE CYCLE PHASES                 SYST      28
C      IPH( )          - FIRST CBS ELEMENT NUMBER OF EACH PHASE         SYST      29
C      IPB( )          - CBS ELEMENT NUMBER FOR PAGE BREAKS             SYST      30
C                        (LAST CBS NUMBER FOR THE PAGE)                 SYST      31
C      IPHASE( , )     - TITLES OF CBS PHASES                           SYST      32
C      FLEETZ          - FLEET (SYSTEM) SIZE                            SYST      33
C      NROLL( )        - LOWEST COST ELEMENT LEVEL TO BE PRINTED        SYST      34
C                        (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)    SYST      35
C      RDTOT           - TOTAL RDT&E COST                               SYST      36
C      TOTINV          - TOTAL INVESTMENT COST MINUS TOTAL RIFOUT       SYST      37
C      TOTRIP          - TOTAL RIFOUT COST                              SYST      38
C      SMISRD          - MISSILE RDT&E COST                             SYST      39
C      NOFLY           - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN       SYST      40
C                        FLYAWAY COSTS                                  SYST      41
C      IFLYROW( )      - CBS ELEMENT NUMBER FOR FLYAWAY COSTS           SYST      42
C      NOYRS           - NUMBER OF YEARS IN SHIP INSTALLATION TABLE     SYST      43
C      IYEARS          - YEARS COVERED BY THE SHIP INSTALLATION TABLE   SYST      44
C      IYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE     SYST      45
C                        PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE) SYST      46
C      FNOTES( , )     - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS    SYST      47
C                                                                       SYST      48
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),       SYST      49
     1         IPHASE(2,4),FLEETZ,NROLL(4),RDTOT,TOTINV,TOTRIP,         SYST      50
     2         SMISRD,NOFLY,IFLYROW(25),NOYRS,IYEARS(12),IYRS,          SYST      51
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      3         FNOTES(5,12)                                                SYST      52
       INTEGER APPRO,SPCL,FLEETZ                                          SYST      53
      C                                                                   SYST      54
      C                                                                   MS2       2
      C ************** MS (LENGTH AND COUNTER) COMMON ******************   MS2       3
      C                                                                   MS2       4
      C                                                                   MS2       5
      C      LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH     MS2       6
      C                        (TYPICALLY 150)                            MS2       7
      C      NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)     MS2       8
      C      ICCTR           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT       MS2       9
      C                        ELEMENTS TABLE                             MS2       10
      C      L150            - (150 WORDS) RECORD LENGTH OF 7 ARRAYS       MS2       11
      C                        IN THE "CERVLS" COMMON                     MS2       12
      C      L900            - (900 WORDS) RECORD LENGTH OF 2 ARRAYS       MS2       13
      C                        IN THE "CERVLS" COMMON                     MS2       14
      C                                                                   MS2       15
            COMMON / MS2 / LENR,NWBS,ICCTR,L150,L900                      MS2       16
      C                                                                   MS2       17
      C                                                                   MS2       18
      C                                                                   MS2       19
      C                                                                   NPUT      2
      C************************** NPUT COMMON ****************************NPUT      3
      C                                                                   NPUT      4
      C VARIOUS OTHER ARRAYS ARE EQUIVALENCED TO THE "ARAY" ARRAY AS IN    NPUT      5
      C                                                                   NPUT      6
      C  - SLCOM  : ROW   = ARAY(1,1)                                     NPUT      7
      C  - BUDGET : CG    = ARAY(1,2)                                     NPUT      8
      C  - INPUPO : IOREC = ARAY(1,1)                                     NPUT      9
      C  - COMPCMP: ROW   = ARAY(1,1)                                     NPUT      10
      C  - APCELM : IRAY  = ARAY(1,1)                                     NPUT      11
      C                                                                   NPUT      12
            COMMON / NPUT    /  ARAY(150,2)                             NPUT      13
      C                                                                   NPUT      14
      C                                                                   CHARTS    2
      C ********************CHARTS (CONTROL) COMMON ***********************CHARTS    3
      C                                                                   CHARTS    4
      C                                                                   CHARTS    5
      C      CHRTCNT CONTAINS THE MAJOR OUTPUT CHART CONTROLS             CHARTS    6
      C                  0   - GENERATE CHART                             CHARTS    7
      C                  1   - NO GENERATION OF CHART                     CHARTS    8
      C                                                                   CHARTS    9
      C      CHRTCNT(1)      - IF EQUAL TO 0 - CALLS WBSOUT(1) FOR EQUIPMENT CHARTS  10
      C                        ELEMENT LIFE CYCLE COSTS - FLEET SUMMARY   CHARTS    11
      C      CHRTCNT(2)      - IF EQUAL TO 0 - CALLS WBSOUT(2) FOR UNIT    CHARTS    12
      C                        SHIP COSTS BY EQUIPMENT ELEMENT            CHARTS    13
      C                      - IF NE. TO 0   - CALLS WBSTOT BECAUSE       CHARTS    14
      C                        WBSOUT(2) WAS NOT CALLED                   CHARTS    15
      C      CHRTCNT(3)      - IF EQUAL TO 0 - CALLS WBSOUT(3) FOR SHIP    CHARTS    16
      C                        CLASS SUMMARY                              CHARTS    17
      C      CHRTCNT(4)      - IF EQUAL TO 0 - CALLS BUDGOP FOR LIFE       CHARTS    18
      C                        CYCLE COSTS BY BUDGET APPROPRIATIONS       CHARTS    19
      C      CHRTCNT(5)      - IF NE. TO 0   - CALLS ROLCNT FOR OUTPUT BY  CHARTS    20
      C                        ROLL-UP NUMBER                             CHARTS    21
      C      CHRTCNT(6)      - IF EQUAL TO 0 - LISTS THE SUBELS ARRAY      CHARTS    22
      C                        FOR ENTIRE CES FOR PROOFING                CHARTS    23
      C                                                                   CHARTS    24
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      C                                                                      CHARTS     25
            COMMON / CHARTS  /  CHRTCNT(15)                                  CHARTS     26
            INTEGER CHRTCNT                                                  CHARTS     27
      C                                                                      CERVLS      2
      C                                                                      CERVLS      3
      C ***** CERVLS (COST ESTIMATING RELATIONSHIP (CER) VALUES) COMMON ***** CERVLS      4
      C                                                                      CERVLS      5
      C     THE CERVLS COMMON CONTAINS LOCATIONS FOR STORAGE OF THE CER      CERVLS      6
      C INPUT CARD COUNT, THE ROW ID'S, THE CER EQUATION NUMBERS, THE        CERVLS      7
      C ROW CROSS REFERENCE NUMBERS, THE INPUT PARAMETERS, THE ADDITION      CERVLS      8
      C OR CERS CONTROL, STORAGE ARRAY FOR EQUIPMENT NAME, CER INDEX,        CERVLS      9
      C AND TPUT/NPUT INDEXES FOR ALL EQUIPMENT INPUT.                       CERVLS     10
      C                                                                      CERVLS     11
      C      CERCT          - NUMBER OF CER'S FOR THIS PARTICULAR EQUIPMENT  CERVLS     12
      C                       (1 WORD)                                       CERVLS     13
      C      IFORC( )       - (F OR C) ALPHABETIC CHARACTER INDICATING       CERVLS     14
      C                       'FACTOR' OR 'CER'.   (150 WORDS)               CERVLS     15
      C      IROWIC         - CBS ELEMENT NUMBER TO WHICH THIS CER APPLIES   CERVLS     16
      C                       (150 WORDS)                                    CERVLS     17
      C      IADD           - CER CONTROL FLAGS (0 THRU 6) FOR ADDITIVE      CERVLS     18
      C                       CERS OR SUBELEMENTS. 0 INDICATES NO ADDING.    CERVLS     19
      C                       1 THRU 6 INDICATE ADD UP SUBELEMENTS.          CERVLS     20
      C                       (150 WORDS)                                    CERVLS     21
      C      ICERNC         - REFERENCE NUMBER FOR CER EQUATIONS IN THE      CERVLS     22
      C                       'CERCOMP' SUBROUTINE.  (150 WORDS)             CERVLS     23
      C      IXREFNO        - CBS ELEMENT NUMBER USED IN CROSS REFERENCING   CERVLS     24
      C                       A PREVIOUSLY COMPUTED CBS ELEMENT.  AT PRESENT CERVLS     25
      C                       ONLY CER EQUATION NUMBER 6 ALLOWS CROSS        CERVLS     26
      C                       REFERENCING.   0 INDICATES NO CROSS-REF.       CERVLS     27
      C                       (150 WORDS)                                    CERVLS     28
      C      IXREFAD        - CER CONTROL FLAGS FOR CROSS-REFERENCING        CERVLS     29
      C                       CER SUB-ELEMENTS. (150 WORDS)                  CERVLS     30
      C      IFSTORE        - STORES 'FACTOR' PARAMETERS. (900 WORDS)        CERVLS     31
      C      PSSTORE        - STORES NUMBERICAL PARAMETERS. (900 WORDS)      CERVLS     32
      C      ICER( )        - A SINGLY-SUBSCRIPTED ARRAY CONTAINING A        CERVLS     33
      C                       MAXIMUM OF 100 DATA TRIPLETS WHOSE MEMBERS     CERVLS     34
      C                       ARE:                                           CERVLS     35
      C        ICER(1,4,7,   - EQUIPMENT NAME                               CERVLS     36
      C             ETC)                                                     CERVLS     37
      C        ICER(2,5,8    - INDEX FOR MASS STORAGE UNIT 8.  INDEX        CERVLS     38
      C             ETC)       BEGINS AT 1 AND INCREMENTS BY 9 (1,10,19,    CERVLS     39
      C                        ETC). THE FOLLOWING DATA RECORDS ARE           CERVLS     40
      C                        INDEXED:                                       CERVLS     41
      C                           1   CERCT        6   IXREFNO               CERVLS     42
      C                           2   IFORC        7   IXREFAD               CERVLS     43
      C                           3   IROWIC       8   IFSTORE               CERVLS     44
      C                           4   IADD         9   PSSTORE               CERVLS     45
      C                           5   ICERNC                                 CERVLS     46
      C        ICER(3,6,9    - INDEX FOR MASS STORAGE UNIT 2 AND 3.         CERVLS     47
      C                        INDEX BEGINS AT 18 AND INCREMENTS BY 2         CERVLS     48
      C                        (18,20,22,ETC) AND IS IDENTICAL TO THE         CERVLS     49
      C                        THIRD MEMBER OF DATA TRIPLET STORED IN         CERVLS     50
      C                        THE IREC ARRAY.                                CERVLS     51
      C      SUBELS( , )    - SUBELS IS A CROSS-MATCHED ARRAY WHICH IS       CERVLS     52
      C                       RELATED ONE-TO-ONE TO THE CBS.                 CERVLS     53
      C                       IT IS USED LOCALLY WITHIN 'COMPCMP' AND        CERVLS     54
      C                       'CERCOMP' FOR INTERIM STORAGE OF UP TO         CERVLS     55
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                C                       SIX SUBELEMENTS, 1 THRUPUT, AND 1 TOTAL          CERVLS     56
                C                       VALUE  FOR EACH CBS ELEMENT.                     CERVLS     57
                C      FACTOR( I )      - A FACTOR IS A PRECURSOR OF ONE OR MORE         CERVLS     58
175             C                         CERS.                                          CERVLS     59
                C                                                                        CERVLS     60
                C                                                                        CERVLS     61
                      COMMON /CERVLS/ CERCT, IFORC(150), IROWID(150), IADD(150),         CERVLS     62
                     C                ICERNO(150), IXREFNO(150),IXREFAD(150),          CERVLS     63
180                  2                 IFSTORE(6,150),PSSTORE(6,150),ICER(300),        CERVLS     64
                     C                SUBELS(8,150), FACTORS(150)                      CERVLS     65
                      INTEGER CERCT                                                      CERVLS     66
                C                                                                        CERVLS     67
                C ********************* ROLUPCT COMMON ************************        CERVLS     68
185             C                                                                        CERVLS     69
                C                                                                        COMPCMP    14
                      DIMENSION ROW(150)                                                 COMPCMP    15
                C                                                                        COMPCMP    16
                      EQUIVALENCE ( ROW, ARAY(1,1) )                                     COMPCMP    17
190             C                                                                        COMPCMP    18
                      INTEGER OCUAN,CERCTX6                                              COMPCMP    19
                      DATA I1PRIM  / 3455212211150000000B /                              COMPCMP    20
                      DATA I1NAVY  / 3455160126300000003B /                              COMPCMP    21
                      DATA I1MAMM  / 3455150115150000000B /                              COMPCMP    22
195                   DATA I1CAMM  / 3455030116160000000B /                              COMPCMP    23
                      DATA I1MLCM  / 3455151403100000000B /                              COMPCMP    24
                      DATA I2GAMM  / 3555070115150000000B /                              COMPCMP    25
                      DATA I6FCS   / 4155060323650300000B /                              COMPCMP    26
                   2222 FORMAT (4H=** /4H ** ,A10,* CERCT = *,I5,* =*,O21,5X,I6/4H ** )  COMPCMP    27
200             C                                                                        COMPCMP    28
                C     READ THRUPUTS AND INPUTS                                           COMPCMP    29
                C                                                                        COMPCMP    30
                      CALL READMS ( 3, ROW, NWBS, NEXMS )                                COMPCMP    31
                      CALL READMS ( 3, ARAY(1,2), LERR, NOXMS+1 )                        COMPCMP    32
205             C                                                                        COMPCMP    33
                C INITIALIZE THE COMMON "SUBELS" & "FACTORS" ARRAYS TO ALL ZEROES;       COMPCMP    34
                C PUT TPUTS IN "SUBELS(7,X)" AND "SUBELS(8,X)" FOR TIME-PHASING.         COMPCMP    35
                C                                                                        COMPCMP    36
                      DO 2 I2=1,150                                                      COMPCMP    37
210                   FACTORS(I2) = 0.                                                   COMPCMP    38
                      DO 1 I1=1,8                                                        COMPCMP    39
                      SUBELS(I1,I2) = 0.                                                 COMPCMP    40
                    1 CONTINUE                                                           COMPCMP    41
                    2 CONTINUE                                                           COMPCMP    42
215                   DO 4 I3=1,NWBS                                                     COMPCMP    43
                      SUBELS(7,I3) = ROW(I3)                                             COMPCMP    44
                      SUBELS(8,I3) = ROW(I3)                                             COMPCMP    45
                    4 CONTINUE                                                           COMPCMP    46
                C                                                                        COMPCMP    47
220             C              READ IN CER DATA                                          COMPCMP    48
                      CALL READMS ( 8, CERCT, 1, NOXCER )                                COMPCMP    49
                      IF (CERCT.GT.0) GO TO 5                                            COMPCMP    50
                      GO TO 10                                                           COMPCMP    51
                    5 CERCTX6 = CERCT * 6                                                COMPCMP    52
225                   CALL READMS (8, IFORC  , CERCT  , NOXCER+1)                        COMPCMP    53
                      CALL READMS (8, IROWID , CERCT  , NOXCER+2)                        COMPCMP    54
                      CALL READMS (8, IADD   , CERCT  , NOXCER+3)                        COMPCMP    55
                      CALL READMS (8, ICERNO , CERCT  , NOXCER+4)                        COMPCMP    56
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      CALL READMS (8, IXREFNC, CERCT  , NDXCER+5)
      CALL READMS (8, IXREFAU, CERCT  , NDXCER+6)
      CALL READMS (8, IFSTORE, CERCTX6, NDXCER+7)
      CALL READMS (8, PSSTORE, CERCTX6, NDXCER+8)
C  TEST FOR SPECIAL COMP'S, 1 PRIME AND 1 NAVY
C
      IF (EQUI.EQ.I1PRIM) GO TO 40
      IF (EQUI.EQ.I1NAVY) GO TO 50
      GO TO 60
C
C   ************  1 PRIME   **************
C   DEFINE AGGREGATE WBS COSTS OF 1 PRIME.  WBS ELEMENTS
C   FOR 1 PRIME ARE BASED ON PERCENTAGES OF ALL PREVIOUS
C   WBS COMPONENT ELEMENTS AT A PARTICULAR WBS LEVEL.
   40 ROW(11)  = .069*RDTOT + 2.
      ROW(12)  = .136*RDTOT
      ROW(14)  = .109*RDTOT
      ROW(16)  = .023*RDTOT + 1.31
      ROW(20) = .062*(TOTINV -TOTRIP)
 2226 FORMAT(1H0,*TOTINV = *,F10.2,5X,*TOTRIP = *,F10.2,5X,
     1*ROW(20) = *,F10.2)
      WRITE(6,2226) TOTINV,TOTRIP,ROW(20)
      GO TO 60
C   ************  1 NAVY   **************
C   DEFINE AGGREGATE WBS COSTS OF 1 NAVY.  WBS ELEMENTS
C   FOR 1 NAVY ARE BASED ON PERCENTAGES OF ALL PREVIOUS
C   WBS COMPONENT ELEMENTS AT A PARTICULAR WBS LEVEL.
   50 ROW(11)  = .142*(RDTOT + SMISRD)
      ROW(14) = .071*(RDTOT + SMISRD)
      ROW(20) = .1*(TOTINV - TOTRIP)
   60 CONTINUE
C
C                EVALUATE THE ROW ELEMENTS IN THE CERCMP ROUTINE
C ***********************************************************
C
      CALL CERCMP (I9,ROW,QQUAN,Q2)
C
C ***********************************************************
      CALL ROLLUP (ROW)
C
C ***********************************************************
      IF (EQUI.EQ.I1MAMM) GO TO 300
      IF (EQUI.EQ.I1CANN) GO TO 300
      IF (EQUI.EQ.I1MLCH) GO TO 300
      IF (EQUI.EQ.I2GAMM) GO TO 300
      IF (EQUI.EQ.I6FCS)   GO TO 300
      RDTOT    = RDTOT + ROW(1)
      GO TO 400
  300 SMISRD = SMISRD + ROW(1)
  400 TOTINV = TOTINV + ROW(18)
      TOTRIP   = TOTRIP + ROW(36)
 2225 FORMAT(1H0,*TOTINV = *,F10.2,5X,*TOTRIP = *,F10.2,5X,
     1*RDTOT = *,F10.2,5X,*SMISRD = *,F10.2)
C     WRITE(6,2225) TOTINV,TOTRIP,RDTOT,SMISRD
   10 CONTINUE
      IF(CERCT.EQ.0) CALL ROLLUP(ROW)
C
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      C LIST THE "SUBELS" ARRAY FOR PROGRAM PROVING                          COMPCMP  114
      C                                                                      COMPCMP  115
            IF(CMRICNT(6).NE.0) GO TO 30                                     COMPCMP  116
            CALL HEAD                                                        COMPCMP  117
290         WRITE (6,1111) NAMESC(I9,1),NAMESC(I9,2),(M,M=1,8)               COMPCMP  118
       1111 FORMAT (*0AFTER "CLRCMP" AND BEFORE "TYMFAZ" LIST THE "SUBELS"*,  COMPCMP  119
           C        * ARRAY FROM "COMPCMP" FOR COMPONENT *,A7,* *,A7 /        COMPCMP  120
           C        *0 W B S *,8(3X,*SUBELEMENT*,I2) /                       COMPCMP  121
           C        * ELEMENT*,93X,*TPUT  VALUE*,4X,*TOTAL VALUE* / 1X)      COMPCMP  122
295         DO 11 J=1,NWBS                                                   COMPCMP  123
            WRITE (6,1112) J,(SUBELS(K,J),K=1,8)                             COMPCMP  124
         11 CONTINUE                                                         COMPCMP  125
       1112 FORMAT (2X,I3,3X,8(3X,F10.5,2X))                                 COMPCMP  126
      C                                                                      COMPCMP  127
3..   C THE FIRST HALF OF "ROW" ARRAY NOW CONTAINS AGGREGATE COMPONENT COSTS COMPCMP  128
      C TIME-PHASE APPROPRIATE WBS ELEMENTS, SUB-ELEMENTS AND TPUTS HERE.    COMPCMP  129
      C                                                                      COMPCMP  130
         30 CONTINUE                                                         COMPCMP  131
      C                                                                      COMPCMP  132
3.5   C                PRODUCE THE UNIT COSTS PER EQUIPMENT                  COMPCMP  133
      C                                                                      COMPCMP  134
            Q1 = QQUAN                                                       COMPCMP  135
            IPHL   = IPH(NPH)                                                COMPCMP  136
            NWBSM1 = NWBS - 1                                                COMPCMP  137
310         DO 20 I=1,NWBSM1                                                 COMPCMP  138
            IF (NPH.EQ.2) GO TO 15                                           COMPCMP  139
            IF (I.LT.IPHL) GO TO 15                                          COMPCMP  140
            IF(Q1.EQ.0.) GO TO 12                                            COMPCMP  141
            ROW(I) = ROW(I)/Q1                                               COMPCMP  142
315         GO TO 20                                                         COMPCMP  143
         12 CONTINUE                                                         COMPCMP  144
            ROW(I) = 0.                                                      COMPCMP  145
            GO TO 20                                                         COMPCMP  146
         15 CONTINUE                                                         COMPCMP  147
320         IF (Q2.NE.0.) GO TO 17                                           COMPCMP  148
            ROW(I) = ROW(I)/Q2                                               COMPCMP  149
            GO TO 20                                                         COMPCMP  150
         17 CONTINUE                                                         COMPCMP  151
            ROW(I) = 0.                                                      COMPCMP  152
325      20 CONTINUE                                                         COMPCMP  153
      C*                                                                     COMPCMP  154
      C*    TOTAL UNIT COST FOR THE COMPONENT                                COMPCMP  155
      C                                                                      COMPCMP  156
      C*       WRITE UNIT COST TOTALS BACK TO MASS STORAGE                   COMPCMP  157
335   C*       IN THE SAME POSITIONS WHENCE CAME THE "TPUT" VALUES           COMPCMP  158
      C                                                                      COMPCMP  159
            CALL WRITMS ( 3, ROW, NWBS, NOXMS )                              COMPCMP  160
            RETURN                                                           COMPCMP  161
            END                                                              COMPCMP  162
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      SUBROUTINE CERCMP (I9,ROW,CQUAN,Q2)                                CERCMP     2
C                                                                        CERCMP     3
C              THIS ROUTINE DECODES THE PROPER CER EQUATION NUMBER,      CERCMP     4
C          COMPUTES THE ROW ELEMENT USING THE PROPER PARAMETERS          CERCMP     5
C          AND A XREF NUMBER IF NEEDED.                                  CERCMP     6
C          THIS ROUTINE WILL ALSO SUM THE CER'S WHEN THE PROPER          CERCMP     7
C          CONTROL IS SET.                                               CERCMP     8
C          IADD  =  0 NO SUMMATION                                       CERCMP     9
C                =  1  INITIALIZE LOCATION FOR SUMMATION                 CERCMP    10
C                =  2 ADD NEW CER EVALUATION TO WHATEVER IS IN THE ROW   CERCMP    11
C                     ID                                                 CERCMP    12
C                                                                        CERCMP    13
C                                                                        SYST       2
C ********************** NAMES COMMON ***************************        SYST       3
C                                                                        SYST       4
C      NMSYS           - NAME OF THE SYSTEM                              SYST       5
C      NOSLB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED          SYST       6
C      NMSUB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS              SYST       7
C      NOCOMP( )       - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)        SYST       8
C                        (RUNNING TOTAL FOR EQUIPMENTS)                  SYST       9
C      NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES         SYST      10
C                        IN WBSOUT (INDEXED BY EQUIPMENT NUMBER          SYST      11
C                        AND SHIPCLASS NUMBER)                           SYST      12
C      NAMESC( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)       SYST      13
C                        FOR EQUIPMENT QUANTITIES TABLE - FLEET          SYST      14
C                        SUMMARY                                         SYST      15
C      EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)             SYST      16
C      SHIPNM          - PRESENT SHIPCLASS (BEING PROCESSED)             SYST      17
C                                                                        SYST      18
C                                                                        SYST      19
      COMMON / NAMES   /  NMSYS, NOSLB, NMSUB(2,43), NOCOMP(43),         SYST      20
     1         NMCOMP(2,100,43),NAMESC(100,2),EQUI,SHIPNM                SYST      21
      INTEGER EQUI,SHIPNM                                                SYST      22
C ****************MISC (MISCELLANEOUS) COMMON ******************         SYST      23
C                                                                        SYST      24
C      NAP             - COUNT OF DIFFERENT APPROPRIATION CODES          SYST      25
C      APPRO( )        - APPROPRIATION CODE NAMES                        SYST      26
C      SPCL( , )       - PERCENTAGES FOR CBS ELEMENT COST SPLITS         SYST      27
C      NPH             - COUNT OF THE LIFE CYCLE PHASES                  SYST      28
C      IPH( )          - FIRST CBS ELEMENT NUMBER OF EACH PHASE          SYST      29
C      IPB( )          - CBS ELEMENT NUMBER FOR PAGE BREAKS              SYST      30
C                        (LAST CBS NUMBER FOR THE PAGE)                  SYST      31
C      IPHASE( , )     - TITLES OF CBS PHASES                            SYST      32
C      FLEETZ          - FLEET (SYSTEM) SIZE                             SYST      33
C      NROLL( )        - LOWEST COST ELEMENT LEVEL TO BE PRINTED         SYST      34
C                        (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)     SYST      35
C      RDTCT           - TOTAL RDT&E COST                                SYST      36
C      TOTINV          - TOTAL INVESTMENT COST MINUS TOTAL RIFOUT        SYST      37
C      TOTRIF          - TOTAL RIFOUT COST                               SYST      38
C      SMISRD          - MISSILE RDT&E COST                              SYST      39
C      NOFLY           - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN        SYST      40
C                        FLYAWAY COSTS                                   SYST      41
C      IFLYROW( )      - CBS ELEMENT NUMBER FOR FLYAWAY COSTS            SYST      42
C      NOYRS           - NUMBER OF YEARS IN SHIP INSTALLATION TABLE      SYST      43
C      IYEARS          - YEARS COVERED BY THE SHIP INSTALLATION TABLE    SYST      44
C      IYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE      SYST      45
C                        PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE) SYST      46
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C       FNOTES( , )    - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS      SYST      47
C                                                                         SYST      48
      COMMON / MISC / NAP,APPRO(7),SPOL(3,6,2),NPH,IPH(4),IPB(3),         SYST      49
     1          IPHASE(2,4),FLEETZ,NROLL(4),ROTOT,TOTINV,TOTRIP,         SYST      50
     2          SMISRO,NOFLY,IFLYFOW(25),NOYRS,IYEARS(12),IYRS,          SYST      51
     3          FNOTES(5,12)                                             SYST      52
      INTEGER APPRO,SPOL,FLEETZ                                          SYST      53
C                                                                         SYST      54
C                                                                         MS2       2
C ************** MS (LENGTH AND COUNTER) COMMON ****************         MS2       3
C                                                                         MS2       4
C                                                                         MS2       5
C       LENR           - MASS STORAGE UNITS COMMON RECORD LENGTH          MS2       6
C                        (TYPICALLY 150)                                  MS2       7
C       NWBS           - NUMBER OF ELEMENTS IN THE CBS (MAX 150)          MS2       8
C       ICCTR          - NUMBER OF EQUIPMENTS IN THE EQUIPMENT            MS2       9
C                        ELEMENTS TABLE                                   MS2       10
C       L150           - (150 WORDS) RECORD LENGTH OF 7 ARRAYS            MS2       11
C                        IN THE "CERVLS" COMMON                           MS2       12
C       L900           - (900 WORDS) RECORD LENGTH OF 2 ARRAYS            MS2       13
C                        IN THE "CERVLS" COMMON                           MS2       14
C                                                                         MS2       15
      COMMON / MS2 / LENR,NWBS,ICCTR,L150,L190                            MS2       16
C                                                                         MS2       17
C                                                                         MS2       18
C                                                                         MS2       19
C                                                                         CERVLS    2
C                                                                         CERVLS    3
C ***** CERVLS (COST ESTIMATING RELATIONSHIP (CER) VALUES) COMMON ******  CERVLS    4
C                                                                         CERVLS    5
C     THE CERVLS COMMON CONTAINS LOCATIONS FOR STORAGE OF THE CER         CERVLS    6
C INPUT CARD COUNT, THE ROW ID'S, THE CER EQUATION NUMBERS, THE           CERVLS    7
C ROW CROSS REFERENCE NUMBERS, THE INPUT PARAMETERS, THE ADDITION         CERVLS    8
C OR CERS CONTROL, STORAGE ARRAY FOR EQUIPMENT NAME, CER INDEX,           CERVLS    9
C AND IPUT/NPUT INDEXES FOR ALL EQUIPMENT INPUT.                          CERVLS    10
C                                                                         CERVLS    11
C       CERCT          - NUMBER OF CER'S FOR THIS PARTICULAR EQUIPMENT    CERVLS    12
C                        (1 WORD)                                         CERVLS    13
C       IFORC( )       - (F OR C) ALPHABETIC CHARACTER INDICATING         CERVLS    14
C                        'FACTOR' OR 'CER',   (150 WORDS)                CERVLS    15
C       IROWID         - CBS ELEMENT NUMBER TO WHICH THIS CER APPLIES     CERVLS    16
C                        (150 WORDS)                                      CERVLS    17
C       IADD           - CER CONTROL FLAGS (0 THRU 6) FOR ADDITIVE        CERVLS    18
C                        CERS OR SUBELEMENTS. 0 INDICATES NO ADDING.      CERVLS    19
C                        1 THRU 6 INDICATE ADD UP SUBELEMENTS.            CERVLS    20
C                        (150 WORDS)                                      CERVLS    21
C       ICCRNC         - REFERENCE NUMBER FOR CER EQUATIONS IN THE        CERVLS    22
C                        'CERCOMP' SUBROUTINE.  (150 WORDS)               CERVLS    23
C       IXREFNO        - CBS ELEMENT NUMBER USED IN CROSS REFERENCING     CERVLS    24
C                        A PREVIOUSLY COMPUTED CBS ELEMENT.  AT PRESENT   CERVLS    25
C                        ONLY CER EQUATION NUMBER 8 ALLOWS CROSS          CERVLS    26
C                        REFERENCING.   0 INDICATES NO CROSS-REF.         CERVLS    27
C                        (150 WORDS)                                      CERVLS    28
C       IXREFAD        - CER CONTROL FLAGS FOR CROSS-REFERENCING          CERVLS    29
C                        CER SUB-ELEMENTS. (150 WORDS)                    CERVLS    30
C       IFSTORE        - STORES 'FACTOR' PARAMETERS. (900 WORDS)          CERVLS    31
C       PSSTORE        - STORES NUMBERICAL PARAMETERS. (900 WORDS)        CERVLS    32
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C       ICER( )          - A SINGLY-SUBSCRIPTED ARRAY CONTAINING A
C                          MAXIMUM OF 100 DATA TRIPLETS WHOSE MEMBERS
C                          ARE:
C         ICER(1,4,7,    - EQUIPMENT NAME
C              ETC)
C         ICER(2,4,8     - INDEX FOR MASS STORAGE UNIT 8.  INDEX
C              ETC)        BEGINS AT 1 AND INCREMENTS BY 9 (1,10,19,
C                          ETC). THE FOLLOWING DATA RECORDS ARE
C                          INDEXED:
C                             1   CERCT        6   IXREFNO
C                             2   IFORC        7   IXREFAD
C                             3   IROWID       8   IFSTORE
C                             4   IADD         9   PSSTORE
C                             5   ICERNC
C         ICER(3,6,9     - INDEX FOR MASS STORAGE UNIT 2 AND 3.
C                          INDEX BEGINS AT 18 AND INCREMENTS BY 2
C                          (18,20,22,ETC) AND IS IDENTICAL TO THE
C                          THIRD MEMBER OF DATA TRIPLET STORED IN
C                          THE IREC ARRAY.
C       SUBELS( , )      - SUBELS IS A CROSS-MATCHED ARRAY WHICH IS
C                          RELATED ONE-TO-ONE TO THE CBS.
C                          IT IS USED LOCALLY WITHIN 'COMPCMP' AND
C                          'CERCOMP' FOR INTERIM STORAGE OF UP TO
C                          SIX SUBELEMENTS, 1 THRUPUT, AND 1 TOTAL
C                          VALUE   FOR EACH CBS ELEMENT.
C       FACTOR( )        - A FACTOR IS A PRECURSOR OF ONE OR MORE
C                          CERS.
C
C
      COMMON /CERVLS/ CERCT, IFORC(150), IROWID(150), IADD(150),
     C                ICERNC(150), IXREFNO(150),IXREFAD(150),
     2                 IFSTORE(6,150),PSSTORE(6,150),ICER(300),
     C                SUBELS(8,150), FACTORS(150)
      INTEGER CERCT
C
C ******************** ROLUPCT COMMON ***********************
C
C
      DIMENSION ROW(1)
      DIMENSION F(6),P(6)
      INTEGER QQUAN,F
      DATA IEFF / 1HF / , ISEE / 1HC /
      DATA NCWNCW / 3000 /
 2222 FORMAT (4H-** /4H ** ,A10,* CERCT = *,I5,* =*,O21,5X,I6/4H ** )
C  Q1 = QQUAN = DEPLOYMENT QUANTITY
      Q1 = QQUAN
C
C
C DO-LOOP 1000 IS MASTER DO-LOOP AND HAS 3 DISTINCT FUNCTIONS:
C     - EARLY CODE (THROUGH 5) EVALUATES LOCAL VARIABLES FROM MS8 VALUES
C       FOR CER IDENTIFIERS AND PARAMETERS AND FACTORS:
C     - MIDDLE CODE (FROM COMPUTED GO TO THROUGH 990) SELECTS
C       AND EVALUATES A "CER" OR "FACTOR":
C     - FINAL CODE (FROM 990 THROUGH 1000) POSITS RESULTS IN
C       "FACTORS" AND "SUBELS" ARRAYS.
C
      CALL HEAD
```

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      SUBROUTINE CERCMP      74/74   OPT=2                    FTN 4.6+433        07/31/79  23.53.41

                  WRITE (6,6) NAMESC(I9,1),NAMESC(I9,2),(N,N=1,6),(M,M=1,8)          CERCMP     37
                6 FORMAT(1H0,45X,*EVALUATION OF CERS AND FACTORS FOR *,              CERCMP     38
                 C A7,1X,A7  /  *0 ROW CER   TEMP  *,6(3X,*F*,I2,3X),1X,             CERCMP     39
      175        C 8(* SUBEL*,I1),2X,*FACTOR*)                                       CERCMP     40
                  DO 1000 I=1,CERCT                                                  CERCMP     41
                  IFRO = IFORC(I)                                                    CERCMP     42
                  IROW = IROWID(I)                                                   CERCMP     43
                  IRAD = IADD(I)                                                     CERCMP     44
      180         JCER = ICERNC(I)                                                   CERCMP     45
                  IXRF = IXREFNO(I)                                                  CERCMP     46
                  IXAD = IXREFAD(I)                                                  CERCMP     47
                  DO 5 J=1,6                                                         CERCMP     48
                  F(J) = IFSTORE(J,I)                                                CERCMP     49
      185         P(J) = PSSTORE(J,I)                                                CERCMP     50
                  IF (F(J).EQ.IEFF) P(J) = FACTORS(IFIX(P(J)))                       CERCMP     51
                5 CONTINUE                                                           CERCMP     52
              C                                                                      CERCMP     53
              C SELECT EQUATION AND EVALUATE "CER" OR "FACTOR"                       CERCMP     54
      190     C                                                                      CERCMP     55
                  GO TO ( 10,  20,  30,  40,  50,  60,  70,  80,  90, 100,         CERCMP     56
                C        110, 120, 130, 140, 150, 160, 170, 180, 190, 200,         CERCMP     57
                C        210,220,230,240,250,260) JCER                             CERCMP     58
               10 TEMP = P(1) * Q2**P(2)                                           CERCMP     59
      195         GO TO 990                                                        CERCMP     60
               20 TEMP = P(1) * Q2**P(2) / P(3)**P(4)                              CERCMP     61
                  GO TO 990                                                        CERCMP     62
               30 TEMP = P(1) * P(2)**P(3) / P(4)**P(5)                            CERCMP     63
                  GO TO 990                                                        CERCMP     64
      200      40 TEMP = P(1) * ((Q2 + P(2))**P(3) - P(2)**P(3))                   CERCMP     65
                  GO TO 990                                                        CERCMP     66
               50 TEMP = P(1) * ((Q2 + P(2))**P(3) - P(2)**P(3)) / P(4)**P(5)      CERCMP     67
                  GO TO 990                                                        CERCMP     68
               60 TEMP = P(1) * ((P(2) + P(3))**P(4) - P(3)**P(4)) / P(5)**P(6)    CERCMP     69
      205         GO TO 990                                                        CERCMP     70
               70 TEMP = P(1) * P(2) * Q2                                          CERCMP     71
                  GO TO 990                                                        CERCMP     72
               80 CONTINUE                                                         CERCMP     73
                  IF (IXAD.EQ.0) IXAD = 8                                          CERCMP     74
      210         TEMP = P(1) * SUBELS(IXAD,IXRF)                                  CERCMP     75
                  GO TO 990                                                        CERCMP     76
               90 TEMP = P(1) * P(2)**P(3) * Q2**P(5)                              CERCMP     77
                  GO TO 990                                                        CERCMP     78
              100 TEMP = P(1) * P(2)**P(3) * P(4)**P(5)                            CERCMP     79
      215         GO TO 990                                                        CERCMP     80
              110 TEMP = P(1) * P(2)**P(3) * P(4) * P(5) * P(6)                    CERCMP     81
                  GO TO 990                                                        CERCMP     82
              120 TEMP = P(1) * P(2) * P(3) * P(4)                                 CERCMP     83
                  GO TO 990                                                        CERCMP     84
      220     130 TEMP = P(1) * P(2) * P(3) / P(4)                                 CERCMP     85
                  GO TO 990                                                        CERCMP     86
              140 TEMP = P(1) * P(2) * P(3) * P(4) * P(5) * P(6)                   CERCMP     87
                  GO TO 990                                                        CERCMP     88
              150 TEMP = P(1) * (P(2)+P(3)+P(4)+P(5)+P(6))                         CERCMP     89
      225         GO TO 990                                                        CERCMP     90
              160 TEMP = P(1)*P(2) + P(3)*P(4) + P(5)*P(6)                         CERCMP     91
                  GO TO 990                                                        CERCMP     92
              170 TEMP = (P(1) + P(2)*P(3)) * Q2                                   CERCMP     93
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```
      GO TO 990
  180 TEMP = (P(1) + P(2)*P(3)) * P(4)
      GO TO 990
  190 TEMP = (P(1) + P(2)*P(3)) * P(4) * P(5) * P(6)
      GO TO 990
  200 TEMP = (P(1) + P(2)*P(3)) * P(4) * P(5)**P(6)
      GO TO 990
  210 TEMP = P(1) * P(2) * P(3) ** P(4) * P(5) ** P(6)
      GO TO 990
  220 TEMP = P(1) / ( P(2) + P(3) + P(4) )
      GO TO 990
  230 TEMP = P(1) + P(2) + P(3) + P(4) + P(5) + P(6)
      GO TO 990
  240 TEMP = P(1) * Q1 ** P(2)
      GO TO 990
  250 TEMP = P(1) * P(2) ** P(3) * Q1 ** P(4)
      GO TO 990
  260 TEMP = P(1) * P(2) * P(3) * Q1
  990 CONTINUE
CC    MYCCC = 1H0
CC    WRITE (6,991) MYCCC,IFRC,IROW,IRAD,JCER,TEMP,
CC   C              (P(N),N=1,6),(SUBELS(M,IROW),M=1,8),FACTORS(IROW)
  991 FORMAT (A1,A1,I3,I1,I2,1X,F8.3,1X,6(1X,1PG8.2),
     C        1X,0P,8F7.1,1X,F7.1)
C
C POSIT RESULT "TEMP" IN "FACTORS" OR "SUBELS" ARRAY
C
      IF (IFRC.EQ.ISEE) GO TO 992
      IF (IFRC.NE.IEFF) STOP 02
      FACTORS(IROW) = TEMP
      GO TO 999
  992 IF(IRAD.EQ.0) GO TO 998
      SUBELS(IRAD,IROW) = TEMP
  998 SUBELS(8,IROW) = SUBELS(8,IROW) + TEMP
  999 CONTINUE
      MYCCC = 1H0
      WRITE (6,991) MYCCC,IFRC,IROW,IRAD,JCER,TEMP,
     C              (P(N),N=1,6),(SUBELS(M,IROW),M=1,8),FACTORS(IROW)
 1000 CONTINUE
C
      DO 1100 K=1,CERCT
      IF (IFORC(K).NE.ISEE) GO TO 1100
      KK = IROWID(K)
      ROW(KK) = SUBELS(8,KK)
 1100 CONTINUE
      RETURN
      END
```

```
      SUBROUTINE ROLLUP (ROW)                                          ROLLUP     2
C                                                                      ROLLUP     3
C              THIS ROUTINE EXECUTES THE ROLL-UP PROCEDURE FOR         ROLLUP     4
C          AUTOMATICALLY SUMMING THE ROW ENTRIES.  THIS ROUTINE        ROLLUP     5
C          IS CALLED EACH TIME THE ROW ELEMENTS ARE ALTERED.           ROLLUP     6
C                                                                      ROLLUP     7
C                                                                      MS2        2
C ************** MS (LENGTH AND COUNTER) COMMON ****************      MS2        3
C                                                                      MS2        4
C                                                                      MS2        5
C      LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH       MS2        6
C                        (TYPICALLY 150)                               MS2        7
C      NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)      MS2        8
C      ICCTR           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT        MS2        9
C                        ELEMENTS TABLE                                MS2       10
C      L150            - (150 WORDS) RECORD LENGTH OF 7 ARRAYS        MS2       11
C                        IN THE "CERVLS" COMMON                        MS2       12
C      L900            - (900 WORDS) RECORD LENGTH OF 2 ARRAYS        MS2       13
C                        IN THE "CERVLS" COMMON                        MS2       14
C                                                                      MS2       15
      COMMON / MS2 / LENR,NWBS,ICCTR,L150,L190                         MS2       16
C                                                                      MS2       17
C                                                                      MS2       18
C                                                                      MS2       19
C        ARRAY DEFINING THE ROLL-UP INPUT NUMBERS, TOTAL COUNT OF      ROLUPCT    2
C        COST ELEMENTS WITH SPECIFIC ROLL-UP NUMBERS TO BE OUTPUT,     ROLUPCT    3
C        ARRAY OF SELECTED WBS ELEMENTS NUMBERS, SELECTED ROLL-UP      ROLUPCT    4
C        OUTPUT FLAG                                                   ROLUPCT    5
      COMMON / ROLUPCT /  IROLL(150), ROLLTOT, ROLLSL(150), ROLLFLG    ROLUPCT    6
      INTEGER ROLLTOT, ROLLSL, ROLLFLG                                 ROLUPCT    7
C                                                                      ROLUPCT    8
C ********************** BUDG COMMON ************************        ROLUPCT    9
C                                                                      ROLUPCT   10
      DIMENSION TOT(10)                                                ROLLUP    10
      DIMENSION ROW(1)                                                 ROLLUP    11
C                                                                      ROLLUP    12
C                                                                      ROLLUP    13
C              INITIALIZE THE SUMMATION ARRAY (TEMPORARY STORAGE)      ROLLUP    14
C          TO ZERO                                                     ROLLUP    15
      DO 10 I=1,10                                                     ROLLUP    16
      TOT(I) = 0.0                                                     ROLLUP    17
   10 CONTINUE                                                         ROLLUP    18
C                                                                      ROLLUP    19
C              SUBTRACT OUT THE LOCATION OF THE FINAL TOTAL            ROLLUP    20
C          (IF THE TOTAL LOCATION IS MOVED FROM THE NWBS LOCATION      ROLLUP    21
C          TO ANY OTHER LOCATION, THIS LOGIC WILL HAVE TO ALTERED)     ROLLUP    22
      N1 = NWBS - 1                                                    ROLLUP    23
C                                                                      ROLLUP    24
   20 CONTINUE                                                         ROLLUP    25
C                                                                      ROLLUP    26
C              SAVE THE INPUT ROLL NUMBERS AND ADD TO RUNNING SUM      ROLLUP    27
      IR = IROLL(N1)                                                   ROLLUP    28
      TOT(IR) = TOT(IR) + ROW(N1)                                      ROLLUP    29
C                                                                      ROLLUP    30
   30 CONTINUE                                                         ROLLUP    31
C                                                                      ROLLUP    32
C              DECREMENT N1, TEST FOR COMPLETION AND TEST TO SEE IF    ROLLUP    33
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SUBROUTINE ROLLUP     74/74   OPT=2                    FTN 4.6+433        07/31/79  23.53.41

      C           THERE IS A ROLL VALUE PRESENT                                  ROLLUP     34
            N1 = N1 - 1                                                          ROLLUP     35
60          IF ( N1 .EQ. 0 ) GO TO 50                                            ROLLUP     36
            IF ( IROLL(N1) .EQ. 0 ) GO TO 30                                     ROLLUP     37
      C                                                                          ROLLUP     38
      C                 TEST ROLL VALUES TO GET TO NEXT STEP -                   ROLLUP     39
      C           IF PREVIOUS IS EQUAL TO PRESENT OR PREVIOUS LESS THAN PRESENT  ROLLUP     40
65    C           SUM IT                                                         ROLLUP     41
            IF ( IROLL(N1+1) - IROLL(N1) ) 20, 20, 40                            ROLLUP     42
      C                                                                          ROLLUP     43
      C                                                                          ROLLUP     44
      C                 IF PREVIOUS IS GREATER THAN PRESENT -                    ROLLUP     45
70    C           PLACE SUMMATION IN PRESENT AND IF THE ROLL NUMBER IS NOT        ROLLUP     46
      C           1, FORCE THE ROLL SUMMATION LOCATION BACK TO ZERO               ROLLUP     47
         40 CONTINUE                                                             ROLLUP     48
      C                                                                          ROLLUP     49
            ROW(N1) = ROW(N1) + TOT(IR)                                          ROLLUP     50
75          IF ( IR .EQ. 1 ) GO TO 20                                            ROLLUP     51
            TOT(IR) = 0.0                                                        ROLLUP     52
            GO TO 20                                                             ROLLUP     53
      C                                                                          ROLLUP     54
      C                 FINAL TOTAL SUMMATION IN WBS CALLED TOTAL                ROLLUP     55
80       50 CONTINUE                                                             ROLLUP     56
            ROW(NWBS) = TOT(1)                                                   ROLLUP     57
      C                                                                          ROLLUP     58
            RETURN                                                               ROLLUP     59
            END                                                                  ROLLUP     60
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      SUBROUTINE WBSTOT                                                 WBSTOT     2
C                                                                       WBSTOT     3
C              THIS ROUTINE COMPUTES THE WBS ELEMENT TOTAL COSTS        WBSTOT     4
C         FOR EACH SHIP.  THESE TOTALS ARE STORED ON MASS STORAGE       WBSTOT     5
C         UNIT 10.  THIS ROUTINE IS ONLY CALLED WHEN THE WBS            WBSTOT     6
C         OUTPUT CHART PER SHIP IS NOT GENERATED.  OTHERWISE            WBSTOT     7
C         THE UNIT 10 TOTALS ARE GENERATED WHEN THE WBS OUTPUT          WBSTOT     8
C         CHART PER SHIP IS GENERATED IN THE WBSOUT ROUTINE.            WBSTOT     9
C                                                                       WBSTOT    10
C ********** CSTAB (EQUIPMENT QUANTITIES) COMMON ****************       CSTAB      2
C                                                                       CSTAB      3
C      QCMPT          - QUANTITY OF EQUIPMENT ALREADY DEPLOYED          CSTAB      4
C                       (O & S ) OVER ALL SHIPCLASSES (Q1) (INTEGER)    CSTAB      5
C      QCMPT2         - QUANTITY OF EQUIPMENT TO BE MANUFACTURER        CSTAB      6
C                       INSTALLED (INVESTMENT) OVER ALL SHICLASSES      CSTAB      7
C                       (Q2) (REAL)                                     CSTAB      8
C      CSTABLE        - SINGLY-DIMENSIONED ARRAY WHOSE MEMBERS ARE      CSTAB      9
C                       A SERIES OF:                                    CSTAB     10
C                             --SHIPCLASS NAME                          CSTAB     11
C                             --O & S QUANTITY OF EQUIPMENT FOR EACH    CSTAB     12
C                               SHIP ON A PARTICULAR SHIPCLASS          CSTAB     13
C                             --INV QUANTITY OF EQUIPMENT FOR EACH      CSTAB     14
C                               SHIP ON A PARTICULAR SHIPCLASS          CSTAB     15
C                       (THESE THREE MEMBERS ARE GIVEN FOR EACH         CSTAB     16
C                        SHIP CLASS MAKING A SERIES OF DATA TRIPLETS)   CSTAB     17
C                       (VALUES ARE INTEGER)                            CSTAB     18
C      CSTABEL        - SINGLY-DIMENSIONED ARRAY OF THE INVESTMENT      CSTAB     19
C                       QUANTITY OF EQUIPMENT FOR EACH SHIP ON A        CSTAB     20
C                       PARTICULAR SHIPCLASS. DATA ELEMENTS MUST        CSTAB     21
C                       BE STORED IN THE SAME SHIPCLASS ORDER AS        CSTAB     22
C                       CSTABLE.  THE TWO ARRAYS MAY BE THOUGHT         CSTAB     23
C                       OF AS A SERIES OF DATA QUADRUPLETS.             CSTAB     24
C                                                                       CSTAB     25
C                                                                       CSTAB     26
      COMMON /CSTAB/QCMPT(100),QCMPT2(100),CSTABLE(3750),CSTABEL(1250)  CSTAB     27
      INTEGER QCMPT,CSTABLE                                             CSTAB     28
C                                                                       MARRAY     2
C ********** MARRAY (IREC ARRAY) COMMON ******************             MARRAY     3
C                                                                       MARRAY     4
C                                                                       MARRAY     5
C     THE IREC ARRAY IS A SINGLY-SUBSCRIPTED ARRAY WHOSE FIRST POSITION MARRAY     6
C IS THE TOTAL NUMBER OF UNIQUE SHIPCLASS/EQUIPMENT COMBINATIONS.       MARRAY     7
C THE NEXT THREE POSITIONS START A SERIES OF TRIPLETS WHOSE             MARRAY     8
C MEMBERS ARE: SHIPCLASS NAME, EQUIPMENT NAME, MS 3 INDEX.              MARRAY     9
C      IREC(1)        - THE RUNNING SUM OF THE TOTAL NUMBER OF UNIQUE   MARRAY    10
C                       SHIPCLASS/EQUIPMENT COMBINATION IN THE          MARRAY    11
C                       EQUIPMENT LEVEL INPUT                           MARRAY    12
C      IREC(2,5,8,    - THE NAME OF THE SHIP CLASS                      MARRAY    13
C           11,ETC)                                                     MARRAY    14
C      IREC(3,6,9     - THE NAME OF THE EQUIPMENT                       MARRAY    15
C           12,ETC)                                                     MARRAY    16
C      IREC(4,7,10    - INDEX FOR MASS STORAGE UNIT 3.  AN INTEGER      MARRAY    17
C           13,ETC)     NUMBER BEGINNING A 18 AND INCREMENTING BY       MARRAY    18
C                       2 TO FORM 18,20,22,24,ETC.  THIS INDEX IS       MARRAY    19
C                       THE STARTING LOCATION OF A RECORD (LENGTH:      MARRAY    20
C                       "NWBS WORDS") ON MASS STORAGE 3 WHICH           MARRAY    21
C                       CONTAINS THE UNIT COSTS OF THE EQUIPMENTS       MARRAY    22
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C                       ON A UNIT SHIP (COMPUTED BY SUBROUTINE          MARRAY    23
C                       COMPCMP).                                       MARRAY    24
C                                                                       MARRAY    25
      COMMON / MARRAY / IREC(3750)                                      MARRAY    26
C                                                                       MS2        2
C ************** MS (LENGTH AND COUNTER) COMMON ***************        MS2        3
C                                                                       MS2        4
C                                                                       MS2        5
C       LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH       MS2        6
C                         (TYPICALLY 150)                               MS2        7
C       NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)       MS2        8
C       ICCTR           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT         MS2        9
C                         ELEMENTS TABLE                                MS2       10
C       L150            - (150 WORDS) RECORD LENGTH OF 7 ARRAYS         MS2       11
C                         IN THE "CERVLS" COMMON                        MS2       12
C       L900            - (900 WORDS) RECORD LENGTH OF 2 ARRAYS         MS2       13
C                         IN THE "CERVLS" COMMON                        MS2       14
C                                                                       MS2       15
      COMMON / MS2 / LENR,NWBS,ICCTR,L150,L900                          MS2       16
C                                                                       MS2       17
C                                                                       MS2       18
C                                                                       MS2       19
C                                                                       NPUT       2
C************************** NPUT COMMON ****************************  NPUT       3
C                                                                       NPUT       4
C VARIOUS OTHER ARRAYS ARE EQUIVALENCED TO THE "ARAY" ARRAY AS IN:       NPUT       5
C                                                                       NPUT       6
C  - SLCOM  : ROW   = ARAY(1,1)                                         NPUT       7
C  - BUDGET : CG    = ARAY(1,2)                                         NPUT       8
C  - INPUPO : IOREC = ARAY(1,1)                                         NPUT       9
C  - COMPCMP: ROW   = ARAY(1,1)                                         NPUT      10
C  - APCELM : IRAY  = ARAY(1,1)                                         NPUT      11
C                                                                       NPUT      12
      COMMON / NPUT    /  ARAY(150,2)                                   NPUT      13
C                                                                       NPUT      14
C                                                                       SYST       2
C ********************** NAMES COMMON ***************************      SYST       3
C                                                                       SYST       4
C       NMSYS           - NAME OF THE SYSTEM                            SYST       5
C       NOSUB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED        SYST       6
C       NMSUB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS            SYST       7
C       NOCOMP( )       - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)      SYST       8
C                         (RUNNING TOTAL FOR EQUIPMENTS)                SYST       9
C       NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES       SYST      10
C                         IN WBSOUT (INDEXED BY EQUIPMENT NUMBER        SYST      11
C                         AND SHIPCLASS NUMBER)                         SYST      12
C       NAMESC( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)     SYST      13
C                         FOR EQUIPMENT QUANTITIES TABLE - FLEET        SYST      14
C                         SUMMARY                                       SYST      15
C       EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)           SYST      16
C       SHIPNM          - PRESENT SHIPCLASS (BEING PROCESSED)           SYST      17
C                                                                       SYST      18
C                                                                       SYST      19
      COMMON / NAMES   /  NMSYS, NOSUB, NMSUB(2,43), NOCOMP(43),       SYST      20
     1         NMCOMP(2,100,43),NAMESC(100,2),EQUI,SHIPNM               SYST      21
      INTEGER EQUI,SHIPNM                                               SYST      22
C ****************MISC (MISCELLANEOUS) COMMON ********************     SYST      23
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C                                                                       SYST      24
C      NAP              - COUNT OF DIFFERENT APPROPRIATION CODES        SYST      25
C      APPRO( )         - APPROPRIATION CODE NAMES                      SYST      26
C      SPCL( , )        - PERCENTAGES FOR CBS ELEMENT COST SPLITS       SYST      27
C      NPH              - COUNT OF THE LIFE CYCLE PHASES                SYST      28
C      IPH( )           - FIRST CBS ELEMENT NUMBER OF EACH PHASE        SYST      29
C      IPB( )           - CBS ELEMENT NUMBER FOR PAGE BREAKS            SYST      30
C                         (LAST CBS NUMBER FOR THE PAGE)                 SYST      31
C      IPHASE( , )      - TITLES OF CBS PHASES                          SYST      32
C      FLEETZ           - FLEET (SYSTEM) SIZE                           SYST      33
C      NROLL( )         - LOWEST COST ELEMENT LEVEL TO BE PRINTED       SYST      34
C                         (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)    SYST      35
C      RDTOT            - TOTAL RDT&E COST                              SYST      36
C      TOTINV           - TOTAL INVESTMENT COST MINUS TOTAL RIPOUT      SYST      37
C      TOTRIP           - TOTAL RIPOUT COST                             SYST      38
C      SMISRD           - MISSILE RDT&E COST                            SYST      39
C      NOFLY            - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN      SYST      40
C                         FLYAWAY COSTS                                  SYST      41
C      IFLYROW( )       - CBS ELEMENT NUMBER FOR FLYAWAY COSTS          SYST      42
C      NOYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE    SYST      43
C      IYEARS           - YEARS COVERED BY THE SHIP INSTALLATION TABLE  SYST      44
C      IYRS             - NUMBER OF YEARS IN SHIP INSTALLATION TABLE    SYST      45
C                         PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE) SYST      46
C      FNOTES( , )      - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS   SYST      47
C                                                                       SYST      48
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),       SYST      49
     1         IPHASE(2,4),FLEETZ,NROLL(4),RDTOT,TOTINV,TOTRIP,         SYST      50
     2         SMISRD,NOFLY,IFLYROW(25),NOYRS,IYEARS(12),IYRS,          SYST      51
     3         FNOTES(5,12)                                             SYST      52
      INTEGER APPRO,SPCL,FLEETZ                                         SYST      53
C                                                                       SYST      54
C                                                                       WBSTOT    16
      DIMENSION TOT(150)                                                WBSTOT    17
C                                                                       WBSTOT    18
C               STARTING INDEX FOR STORAGE OF THE SHIP SUMMARIES        WBSTOT    19
C          TOTALS ON UNIT 10                                            WBSTOT    20
      DATA INDXTOT / 1251 /                                             WBSTOT    21
C                                                                       WBSTOT    22
      IPH2   = IPH(2)                                                   WBSTOT    23
      IPHL   = IPH(NPH)                                                 WBSTOT    24
      NWBSM1 = NWBS - 1                                                 WBSTOT    25
      DO 150 ISUBS=1,NOSUB                                              WBSTOT    26
C                                                                       WBSTOT    27
C               DEFINE INDEXES FOR PICKING THE PROPER COMPONENTS        WBSTOT    28
C          FOR THIS SHIP                                                WBSTOT    29
      IBEG = ICOMP(ISUBS) * 3 + 1                                       WBSTOT    30
      IEND = IBEG + (NOCOMP(ISUBS) - 1) * 3                             WBSTOT    31
      JBEG = (IBEG-1)/3                                                 WBSTOT    32
C                                                                       WBSTOT    33
C               INITIALIZE SUMMATION LOCATIONS                          WBSTOT    34
      DO 10 J=1,NWBS                                                    WBSTOT    35
      TOT(J) = 0.0                                                      WBSTOT    36
   10 CONTINUE                                                          WBSTOT    37
C                                                                       WBSTOT    38
C               DEVELOP THE COMPONENT TOTALS FOR THIS SHIP              WBSTOT    39
C                                                                       WBSTOT    40
C THE FINAL TOTAL (NWBS LINE) IS GOTTEN BY SUMMING THE PHASE BREAK LINES WBSTOT    41
```

```
      C                                                                 WBSTOT    42
            DO 100 I=1,NWBSM1                                           WBSTOT    43
            IBEGX = IBEG                                                WBSTOT    44
            JBEGX = JBEG                                                WBSTOT    45
            IF (I.LT.IPHL) GO TO 60                                     WBSTOT    46
            IF (NPH.EQ.2) GO TO 60                                      WBSTOT    47
      C                                                                 WBSTOT    48
            DO 50 J=IBEG,IEND,3                                         WBSTOT    49
            CALL READMS ( 3, ARAY(1,2), LENR, IREC(J) )                 WBSTOT    50
            TOT(I) = TOT(I) + ARAY(I,2) * FLOAT(CSTABLE(IBEGX-1))       WBSTOT    51
            IBEGX = IBEGX + 3                                           WBSTOT    52
         50 CONTINUE                                                    WBSTOT    53
            GO TO 100                                                   WBSTOT    54
         60 CONTINUE                                                    WBSTOT    55
            DO 70 J=IBEG,IEND,3                                         WBSTOT    56
            CALL READMS ( 3, ARAY(1,2), LENR, IREC(J) )                 WBSTOT    57
            TOT(I) = TOT(I) + ARAY(I,2) * CSTABEL(JBEGX)                WBSTOT    58
         70 CONTINUE                                                    WBSTOT    59
      C                                                                 WBSTOT    60
        100 CONTINUE                                                    WBSTOT    61
            TOT(NWBS) = TOT(1) + TOT(IPH2) + TOT(IPHL)                  WBSTOT    62
      C                                                                 WBSTOT    63
      C                 DEFINE INDEX FOR STORAGE                        WBSTOT    64
            INDX = INDXTOT + ISUBS - 1                                  WBSTOT    65
      C                                                                 WBSTOT    66
      C                 STORAGE OF TOTALS ON UNIT 10                    WBSTOT    67
            CALL WRITMS ( 10, TOT, NWBS, INDX )                         WBSTOT    68
      C                                                                 WBSTOT    69
        150 CONTINUE                                                    WBSTOT    70
      C                                                                 WBSTOT    71
            RETURN                                                      WBSTOT    72
            END                                                         WBSTOT    73
```

```
      SUBROUTINE APCELM                                                 APCELM     2
C                                                                       APCELM     3
C               THIS ROUTINE DEFINES THE IWORD ARRAY USED IN THE        APCELM     4
C          WESOUT ROUTINE -                                             APCELM     5
C               IWORD(I,1) - APPRO CODE                                 APCELM     6
C               IWORD(I,2) - ELEMENT NUMBER                             APCELM     7
C               IWORD(I,3) -                                            APCELM     8
C               IWORD(I,4) - THESE 3 COST ELEMENT TITLE (CBS)           APCELM     9
C               IWORD(I,5) -                                            APCELM    10
C          WHERE 'I' GOES FROM ONE TO NWBS                              APCELM    11
C                                                                       APCELM    12
C        ARRAY CONTAINING APPRO CODE, CBS NUMBER, COST ELEMENT IC       APELOUT    2
      COMMON / APELOUT /  IWORD(150,5)                                  APELOUT    3
C                                                                       NPUT       2
C************************** NPUT COMMON ***************************    NPUT       3
C                                                                       NPUT       4
C VARIOUS OTHER ARRAYS ARE EQUIVALENCED TO THE "ARAY" ARRAY AS IN:      NPUT       5
C                                                                       NPUT       6
C  - SLCOM  : ROW   = ARAY(1,1)                                         NPUT       7
C  - BUDGET : CG    = ARAY(1,2)                                         NPUT       8
C  - INPUPD : IOREC = ARAY(1,1)                                         NPUT       9
C  - COMPCMP: ROW   = ARAY(1,1)                                         NPUT      10
C  - APCELM : IRAY  = ARAY(1,1)                                         NPUT      11
C                                                                       NPUT      12
      COMMON / NPUT    /  ARAY(150,2)                                   NPUT      13
C                                                                       NPUT      14
C                                                                       MS2        2
C ************** MS (LENGTH AND COUNTER) COMMON ****************        MS2        3
C                                                                       MS2        4
C                                                                       MS2        5
C      LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH        MS2        6
C                        (TYPICALLY 150)                                MS2        7
C      NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)        MS2        8
C      ICCTR           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT          MS2        9
C                        ELEMENTS TABLE                                 MS2       10
C      L150            - (150 WORDS) RECORD LENGTH OF 7 ARRAYS          MS2       11
C                        IN THE "CERVLS" COMMON                         MS2       12
C      L900            - (900 WORDS) RECORD LENGTH OF 2 ARRAYS          MS2       13
C                        IN THE "CERVLS" COMMON                         MS2       14
C                                                                       MS2       15
      COMMON / MS2 / LENR,NWBS,ICCTR,L150,L190                          MS2       16
C                                                                       MS2       17
C                                                                       MS2       18
C                                                                       MS2       19
C                                                                       APCELM    16
      DIMENSION IRAY(1)                                                 APCELM    17
C                                                                       APCELM    18
      INTEGER BLANK                                                     APCELM    19
C                                                                       APCELM    20
      EQUIVALENCE ( ARAY, IRAY)                                         APCELM    21
C                                                                       APCELM    22
      DATA BLANK / 10H          /                                       APCELM    23
C                                                                       APCELM    24
C               SETUP WBS COUNTER                                       APCELM    25
      I = 0                                                             APCELM    26
C                                                                       APCELM    27
C               LOOP FOR 5 FILES OF DATA ON UNIT 3                      APCELM    28
```

```
      DO 40 M=1,5                                                       APCELM   29
      CALL READMS ( 3, ARAY, LENR, M )                                  APCELM   30
C                                                                       APCELM   31
C                 DEFINE ALL ELEMENTS ON INDEX M                        APCELM   32
      DO 30 J=1,30                                                      APCELM   33
      I = I + 1                                                         APCELM   34
C                                                                       APCELM   35
C                 TEST FOR NWBS ELEMENTS                                APCELM   36
      IF ( I .GT. NWBS ) GO TO 50                                       APCELM   37
      IWORD(I,1) = IRAY(J*5-4)                                          APCELM   38
      IF ( IWORD(I,1) .EQ. 0 ) IWORD(I,1) = BLANK                       APCELM   39
C                                                                       APCELM   40
      IWORD(I,2) = I                                                    APCELM   41
C                                                                       APCELM   42
      IWORD(I,3) = IRAY(J*5-3)                                          APCELM   43
      IWORD(I,4) = IRAY(J*5-2)                                          APCELM   44
      IWORD(I,5) = IRAY(J*5-1)                                          APCELM   45
      DO 20 N=3,5                                                       APCELM   46
      IF ( IWORD(I,N) .EQ. 0 ) IWORD(I,N) = BLANK                       APCELM   47
   20 CONTINUE                                                          APCELM   48
C                                                                       APCELM   49
   30 CONTINUE                                                          APCELM   50
C                                                                       APCELM   51
   40 CONTINUE                                                          APCELM   52
C                                                                       APCELM   53
   50 CONTINUE                                                          APCELM   54
C                                                                       APCELM   55
      RETURN                                                            APCELM   56
      END                                                               APCELM   57
```

```
      SUBROUTINE ROLCNT                                                 ROLCNT     2
C                                                                       ROLCNT     3
C              THIS ROUTINE WILL BE CALLED WHEN CHRTCNT(5) OPTION IS    ROLCNT     4
C          SET TO 1.  THIS ROUTINE WILL COUNT UP THE NUMBER OF COST     ROLCNT     5
C          ELEMENTS TO BE OUPUT ON THE COMPONENT CHARTS AND THE SHIP    ROLCNT     6
C          SUMMARY CHARTS.  THE COST ELEMENTS ARE SELECTED BY HAVING    ROLCNT     7
C          A ROLL-UP NUMBER EQUAL TO OR LESS THAN THE VALUES INPUT      ROLCNT     8
C          IN BLOCK DATA.  THE INPUT VALUES ARE IN ARRAY NROLL AND THERE ROLCNT    9
C          IS A SEPARATE VALUE FOR EACH PHASE AND/OR PAGE BREAK IF FULL ROLCNT    10
C          PRINTOUT WERE REQUESTED.                                     ROLCNT    11
C                                                                       ROLCNT    12
C                                                                       MS2        2
C ************** MS (LENGTH AND COUNTER) COMMON ****************        MS2        3
C                                                                       MS2        4
C                                                                       MS2        5
C      LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH        MS2        6
C                        (TYPICALLY 150)                                MS2        7
C      NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)        MS2        8
C      ICCTR           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT          MS2        9
C                        ELEMENTS TABLE                                 MS2       10
C      L150            - (150 WORDS) RECORD LENGTH OF 7 ARRAYS          MS2       11
C                        IN THE "CERVLS" COMMON                         MS2       12
C      L900            - (900 WORDS) RECORD LENGTH OF 2 ARRAYS          MS2       13
C                        IN THE "CERVLS" COMMON                         MS2       14
C                                                                       MS2       15
      COMMON / MS2 / LENR,NWBS,ICCTR,L150,L190                          MS2       16
C                                                                       MS2       17
C                                                                       MS2       18
C                                                                       MS2       19
C        ARRAY DEFINING THE ROLL-UP INPUT NUMBERS, TOTAL COUNT OF       ROLLPCT    2
C        COST ELEMENTS WITH SPECIFIC ROLL-UP NUMBERS TO BE OUTPUT,      ROLLPCT    3
C        ARRAY OF SELECTED WBS ELEMENTS NUMBERS, SELECTED ROLL-UP       ROLLPCT    4
C        OUTPUT FLAG                                                    ROLUPCT    5
      COMMON / ROLUPCT /  IROLL(150), ROLLTOT, ROLLSL(150), ROLLFLG     ROLLPCT    6
      INTEGER ROLLTOT, ROLLSL, ROLLFLG                                  ROLLPCT    7
C                                                                       ROLLPCT    8
C ********************** BUDG COMMON ************************          ROLLPCT    9
C                                                                       ROLLPCT   10
C                                                                       SYST       2
C ********************** NAMES COMMON ************************          SYST       3
C                                                                       SYST       4
C      NMSYS           - NAME OF THE SYSTEM                             SYST       5
C      NOSUB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED         SYST       6
C      NMSUB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS             SYST       7
C      NOCOMP( )       - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)       SYST       8
C                        (RUNNING TOTAL FOR EQUIPMENTS)                 SYST       9
C      NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES        SYST      10
C                        IN WBSOUT (INDEXED BY EQUIPMENT NUMBER         SYST      11
C                        AND SHIPCLASS NUMBER)                          SYST      12
C      NAMESC( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)      SYST      13
C                        FOR EQUIPMENT QUANTITIES TABLE - FLEET         SYST      14
C                        SUMMARY                                        SYST      15
C      EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)            SYST      16
C      SHIPNP          - PRESENT SHIPCLASS (BEING PROCESSED)            SYST      17
C                                                                       SYST      18
C                                                                       SYST      19
      COMMON / NAMES   /  NMSYS, NOSUB, NMSUB(2,43), NOCOMP(43),        SYST      20
```

```
     1          NMCOMP(2,100,43),NAMESC(100,2),EQUI,SHIPNM                SYST
      INTEGER EQUI,SHIPNM                                                 SYST
C ****************MISC (MISCELLANEOUS) COMMON ******************          SYST
C                                                                         SYST
C       NAP              - COUNT OF DIFFERENT APPROPRIATION CODES         SYST
C       APPRO( )         - APPROPRIATION CODE NAMES                       SYST
C       SPCL( , )        - PERCENTAGES FOR CBS ELEMENT COST SPLITS        SYST
C       NPH              - COUNT OF THE LIFE CYCLE PHASES                 SYST
C       IPH( )           - FIRST CBS ELEMENT NUMBER OF EACH PHASE         SYST
C       IPB( )           - CBS ELEMENT NUMBER FOR PAGE BREAKS             SYST
C                          (LAST CBS NUMBER FOR THE PAGE)                 SYST
C       IPHASE( , )      - TITLES OF CBS PHASES                           SYST
C       FLEETZ           - FLEET (SYSTEM) SIZE                            SYST
C       NROLL( )         - LOWEST COST ELEMENT LEVEL TO BE PRINTED        SYST
C                          (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)    SYST
C       RDTOT            - TOTAL RDT&E COST                               SYST
C       TOTINV           - TOTAL INVESTMENT COST MINUS TOTAL RIPOUT       SYST
C       TOTRIP           - TOTAL RIPOUT COST                              SYST
C       SMISRD           - MISSILE RDT&E COST                             SYST
C       NOFLY            - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN       SYST
C                          FLYAWAY COSTS                                  SYST
C       IFLYROW( )       - CBS ELEMENT NUMBER FOR FLYAWAY COSTS           SYST
C       NOYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE     SYST
C       IYEARS           - YEARS COVERED BY THE SHIP INSTALLATION TABLE   SYST
C       IYRS             - NUMBER OF YEARS IN SHIP INSTALLATION TABLE     SYST
C                          PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE) SYST
C       FNOTES( , )      - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS    SYST
C                                                                         SYST
      COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),         SYST
     1          IPHASE(2,4),FLEETZ,NROLL(4),RDTOT,TOTINV,TOTRIP,          SYST
     2          SMISRD,NOFLY,IFLYROW(25),NOYRS,IYEARS(12),IYRS,           SYST
     3          FNOTES(5,12)                                              SYST
      INTEGER APPRO,SPCL,FLEETZ                                           SYST
C                                                                         SYST
C                                                                         ROLCNT
      ROLLTOT = 0                                                         ROLCNT
C                                                                         ROLCNT
      DO 10 I=1,NWBS                                                      ROLCNT
C                                                                         ROLCNT
      IF ( I .EQ. 1 ) NOUT = NROLL(1)                                     ROLCNT
      IF ( I .EQ. (IPB(1) + 1) ) NOUT = NROLL(2)                          ROLCNT
      IF ( I .EQ. (IPB(2) + 1) ) NOUT = NROLL(3)                          ROLCNT
      IF ( I .EQ. (IPB(3) + 1) ) NOUT = NROLL(4)                          ROLCNT
C                                                                         ROLCNT
      IF ( IROLL(I) .GT. NOUT ) GO TO 10                                  ROLCNT
C                                                                         ROLCNT
      ROLLTOT = ROLLTOT + 1                                               ROLCNT
      ROLLSL(ROLLTOT) = I                                                 ROLCNT
C                                                                         ROLCNT
   10 CONTINUE                                                            ROLCNT
C                                                                         ROLCNT
      RETURN                                                              ROLCNT
      END                                                                 ROLCNT
```

```
      SUBROUTINE OUT1 (ICALL)                                           CUT1      2
C                                                                       CUT1      3
C      THIS SUBROUTINE, OUT1, WILL GENERATE OUTPUT FOR ALL NWBS         CUT1      4
C COST ELEMENTS FOR THE FLEET SUMMARY CHARTS, THE UNIT SHIP COSTS       CUT1      5
C CHARTS, OR THE SHIP CLASS SUMMARY COSTS CHARTS.                       CUT1      6
C              ICALL = 1  FLEET SUMMARY CHARTS                          CUT1      7
C              ICALL = 2  UNIT SHIP COSTS                               OUT1      8
C              ICALL = 3  SHIP CLASS SUMMARY CHARTS                     CUT1      9
C                                                                       OUT1     10
C        ARRAY CONTAINING APPRO CODE, CBS NUMBER, COST ELEMENT ID       APELOUT   2
      COMMON / APELOUT /  IWORD(150,5)                                  APELOUT   3
C                                                                       MS2       2
C ************** MS (LENGTH AND COUNTER) COMMON ****************        MS2       3
C                                                                       MS2       4
C                                                                       MS2       5
C      LENR            - MASS STORAGE UNITS COMMON RECORD LENGTH        MS2       6
C                        (TYPICALLY 150)                                MS2       7
C      NWBS            - NUMBER OF ELEMENTS IN THE CBS (MAX 150)        MS2       8
C      ICCTR           - NUMBER OF EQUIPMENTS IN THE EQUIPMENT          MS2       9
C                        ELEMENTS TABLE                                 MS2      10
C      L150            - (150 WORDS) RECORD LENGTH OF 7 ARRAYS          MS2      11
C                        IN THE "CERVLS" COMMON                         MS2      12
C      L900            - (900 WORDS) RECORD LENGTH OF 2 ARRAYS          MS2      13
C                        IN THE "CERVLS" COMMON                         MS2      14
C                                                                       MS2      15
      COMMON / MS2 / LENR,NWBS,ICCTR,L150,L190                          MS2      16
C                                                                       MS2      17
C                                                                       MS2      18
C                                                                       MS2      19
C        WBSOUT ROUTINE COMPUTED VALUES, ARRAYS AND CONTROLS NEEDED     OUTCNTS   2
C FOR THE OUT1 SUBROUTINE                                               OUTCNTS   3
C        KSC ARRAY       - SHIP NAMES                                   OUTCNTS   4
C        IFLGCL          - OUTPUT COLUMN FLAG                           OUTCNTS   5
C                          = 0 COMPS OR SHIPS LESS THAN 9               OUTCNTS   6
C                          = 1 COMPS OR SHIPS GREATER THAN 9            OUTCNTS   7
C                          = 2 LAST SET                                 OUTCNTS   8
C        IPG             - PAGING FLAG                                  OUTCNTS   9
C        FMT110 ARRAY    - ENCODED FORMAT 110                           OUTCNTS  10
C        FMT120 ARRAY    - ENCODED FORMAT 120                           OUTCNTS  11
C        KPR ARRAY       - COMPONENT OR SHIP NAMES FOR COLUMN HEADINGS  OUTCNTS  12
C        KC, K1          - INDICES FOR THE KPR ARRAY                    OUTCNTS  13
C        ITOTAL          - HOLLERITH CHARACTERS 'TOTAL'                 OUTCNTS  14
C        TOT ARRAY       - SUMMATION ARRAY FOR FINAL COSTS OF EITHER    OUTCNTS  15
C                          COMPONENTS OR SHIPS                          OUTCNTS  16
C        KCT             - INDEX FOR THE AWORD ARRAY                    OUTCNTS  17
C        AWORD ARRAY     - CONTAINS THE COSTS FOR ALL THE NWBS VALUES   OUTCNTS  18
C                          FOR AT MUST 10 COMPONENTS OR SHIPS           OUTCNTS  19
      COMMON / OUTCNTS /  KSC(2), IFLGCL, IPG, FMT110(14), FMT120(4),   OUTCNTS  20
     1                    KPR(20), KC, K1, ITOTAL, TOT(150), KCT,       OUTCNTS  21
     2                    AWORD(150,10)                                 OUTCNTS  22
     3,FMT123(4),KWORD(3),JWORD(3),UNITFLY(40),TOTUFLY,SHIFFLY(43)      OUTCNTS  23
     4,TOTSHIP                                                          OUTCNTS  24
C        ARRAY DEFINING THE ROLL-UP INPUT NUMBERS, TOTAL COUNT OF       ROLLPCT   2
C        COST ELEMENTS WITH SPECIFIC ROLL-UP NUMBERS TO BE OUTPUT,      ROLLPCT   3
C        ARRAY OF SELECTED WBS ELEMENTS NUMBERS, SELECTED ROLL-UP       ROLLPCT   4
C        OUTPUT FLAG                                                    ROLLPCT   5
      COMMON / ROLUPCT /  IROLL(150), ROLLTOT, ROLLSL(150), ROLLFLG     ROLLPCT   6
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```
      INTEGER ROLLTOT, ROLLSL, ROLLFLG                                  ROLLFCT     7
C                                                                       ROLLFCT     8
C ********************** BUDG COMMON **************************        ROLLFCT     9
C                                                                       ROLLFCT    10
C                                                                       CHARTS      2
C ********************CHARTS (CONTROL) COMMON *********************     CHARTS      3
C                                                                       CHARTS      4
C                                                                       CHARTS      5
C     CHRTCNT CONTAINS THE MAJOR OUTPUT CHART CONTROLS                  CHARTS      6
C                  0   - GENERATE CHART                                 CHARTS      7
C                  1   - NO GENERATION OF CHART                         CHARTS      8
C                                                                       CHARTS      9
C     CHRTCNT(1)      - IF EQUAL TO 0 - CALLS WBSOUT(1) FOR EQUIPMENT   CHARTS     10
C                       ELEMENT LIFE CYCLE COSTS - FLEET SUMMARY        CHARTS     11
C     CHRTCNT(2)      - IF EQUAL TO 0 - CALLS WBSOUT(2) FOR UNIT        CHARTS     12
C                       SHIP COSTS BY EQUIPMENT ELEMENT                 CHARTS     13
C                     - IF NE. TO 0   - CALLS WBSTOT BECAUSE            CHARTS     14
C                       WBSOUT(2) WAS NOT CALLED                        CHARTS     15
C     CHRTCNT(3)      - IF EQUAL TO 0 - CALLS WBSOUT(3) FOR SHIP        CHARTS     16
C                       CLASS SUMMARY                                   CHARTS     17
C     CHRTCNT(4)      - IF EQUAL TO 0 - CALLS BLDGOP FOR LIFE           CHARTS     18
C                       CYCLE COSTS BY BUDGET APPROPRIATIONS            CHARTS     19
C     CHRTCNT(5)      - IF NE. TO 0   - CALLS RCLCNT FOR OUTPUT BY      CHARTS     20
C                       ROLL-UP NUMBER                                  CHARTS     21
C     CHRTCNT(6)      - IF EQUAL TO 0 - LISTS THE SUBELS ARRAY          CHARTS     22
C                       FOR ENTIRE CBS FOR PROOFING                     CHARTS     23
C                                                                       CHARTS     24
C                                                                       CHARTS     25
      COMMON / CHARTS  /  CHRTCNT(15)                                   CHARTS     26
      INTEGER CHRTCNT                                                   CHARTS     27
C                                                                       SYST       2
C ********************** NAMES COMMON *************************        SYST       3
C                                                                       SYST       4
C     NMSYS           - NAME OF THE SYSTEM                            SYST       5
C     NOSUB           - TOTAL NUMBER OF SHIPCLASSES CONSIDERED        SYST       6
C     NMSUB( , )      - NAME OF THE SHIPCLASS IN TWO WORDS            SYST       7
C     NOCOMP( )       - INDEX NUMBER FOR EQUIPMENTS (COMPONENTS)      SYST       8
C                       (RUNNING TOTAL FOR EQUIPMENTS)                SYST       9
C     NMCOMP( , , )   - NAMES OF EQUIPMENT (2 WORDS) FOR TITLES       SYST      10
C                       IN WBSOUT (INDEXED BY EQUIPMENT NUMBER        SYST      11
C                       AND SHIPCLASS NUMBER)                         SYST      12
C     NAMESC( , )     - NAMES OF EQUIPMENT(2 WORDS, 7 CHARS EACH)     SYST      13
C                       FOR EQUIPMENT QUANTITIES TABLE - FLEET        SYST      14
C                       SUMMARY                                       SYST      15
C     EQUI            - PRESENT EQUIPMENT (BEING PROCESSED)           SYST      16
C     SHIPNM          - PRESENT SHIPCLASS (BEING PROCESSED)           SYST      17
C                                                                       SYST      18
C                                                                       SYST      19
      COMMON / NAMES   /  NMSYS, NOSUB, NMSUB(2,43), NCCOMP(43),      SYST      20
     1         NMCOMP(2,100,43),NAMESC(100,2),EQUI,SHIPNM             SYST      21
      INTEGER EQUI,SHIPNM                                             SYST      22
C ****************MISC (MISCELLANEOUS) COMMON ********************     SYST      23
C                                                                       SYST      24
C     NAP             - COUNT OF DIFFERENT APPROPRIATION CODES        SYST      25
C     APPRO( )        - APPROPRIATION CODE NAMES                      SYST      26
C     SPCL( , )       - PERCENTAGES FOR CBS ELEMENT COST SPLITS       SYST      27
C     NPH             - COUNT OF THE LIFE CYCLE PHASES                SYST      28
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SUBROUTINE OUT1        74/74   OPT=2                    FTN 4.6+433        07/31/79  23.53.41

115           C       IPH( )          - FIRST CBS ELEMENT NUMBER OF EACH PHASE          SYST      29
              C       IPB( )          - CBS ELEMENT NUMBER FOR PAGE BREAKS              SYST      30
              C                         (LAST CBS NUMBER FOR THE PAGE)                  SYST      31
              C       IPHASE( , )     - TITLES OF CBS PHASES                            SYST      32
              C       FLEETZ          - FLEET (SYSTEM) SIZE                             SYST      33
120           C       NROLL( )        - LOWEST COST ELEMENT LEVEL TO BE PRINTED         SYST      34
              C                         (LOWEST LEVEL TO BE ROLLED UP WITHIN PHASE)     SYST      35
              C       ROTOT           - TOTAL ROTBE COST                                SYST      36
              C       TOTINV          - TOTAL INVESTMENT COST MINUS TOTAL RIFOUT        SYST      37
              C       TOTRIP          - TOTAL RIFOUT COST                               SYST      38
125           C       SMISRD          - MISSILE ROTBE COST                              SYST      39
              C       NOFLY           - NUMBER OF CBS ELEMENTS TO BE INCLUDED IN        SYST      40
              C                         FLYAWAY COSTS                                   SYST      41
              C       IFLYAWY( )      - CBS ELEMENT NUMBER FOR FLYAWAY COSTS            SYST      42
              C       NOYRS           - NUMBER OF YEARS IN SHIP INSTALLATION TABLE      SYST      43
130           C       IYEARS          - YEARS COVERED BY THE SHIP INSTALLATION TABLE    SYST      44
              C       IYRS            - NUMBER OF YEARS IN SHIP INSTALLATION TABLE      SYST      45
              C                         PLUS ONE (COLUMNS FOR PRINTING SHIP/INST TABLE) SYST      46
              C       FNOTES( , )     - FOOTNOTES FOR FIRST TWO MAJOR OUTPUT CHARTS     SYST      47
              C                                                                         SYST      48
135                   COMMON / MISC / NAP,APPRO(7),SPCL(3,6,2),NPH,IPH(4),IPB(3),       SYST      49
                     1          IPHASE(2,4),FLEETZ,NROLL(4),ROTOT,TOTINV,TOTRIP,      SYST      50
                     2          SMISRD,NOFLY,IFLYAWY(25),NOYRS,IYEARS(12),IYRS,       SYST      51
                     3          FNOTES(5,12)                                          SYST      52
                      INTEGER APPRO,SPCL,FLEETZ                                        SYST      53
140           C                                                                         SYST      54
              C                                                                         CUT1      17
                      DATA IBLANK/1H /, IPLUS/1H+/, IONE/1H1/, IZERO/1H0/, IMINUS/1H-/  OUT1      18
                      DATA KWORD(1) / 10HUNIT FLYAW /                                   CUT1      19
                      DATA KWORD(2) / 10HAY COST    /                                   CUT1      20
145                   DATA KWORD(3) / 10H           /                                   CUT1      21
                      DATA JWORD(1) / 10HSHIP FLYAW /                                   CUT1      22
                      DATA JWORD(2) / 10HAY COST    /                                   CUT1      23
                      DATA JWORD(3) / 10H           /                                   CUT1      24
                    101 FORMAT(A1,51X,*EQUIPMENT ELEMENT LIFE CYCLE COSTS*)             CUT1      25
150                 102 FORMAT (A1,56X,I4,* SHIP FLEET SUMMARY*)                        CUT1      26
                    112 FORMAT(A1,61X,*FLEET SUMMARY*)                                  CUT1      27
                    103 FORMAT (A1,55X,2A10,* PHASE*)                                   CUT1      28
                    104 FORMAT(A1,63X,*(FY79 $M)*)                                      CUT1      29
                    105 FORMAT(A1,24X,2A10,* SHIP CLASS - UNIT SHIP COSTS BY*,          CUT1      30
155                    1* EQUIPMENT ELEMENT*)                                           CUT1      31
                    106 FORMAT (A1,51X,*LIFE CYCLE COSTS -*,I4,* SHIP FLEET*)           CUT1      32
                    107 FORMAT (A1,56X,*SHIP CLASS COST SUMMARY*)                       CUT1      33
                    114 FORMAT (A1,136(1H-)  /  1X)                                     CUT1      34
              C                                                                         CUT1      35
160           C OO-LOOP FOR ALL NWBS VALUES                                             OUT1      36
              C                                                                         CUT1      37
                      ICHARTS = CHRTCNT(5)                                              CUT1      38
                      KELMNTS = NWBS                                                    CUT1      39
                      IF (ICHARTS.NE.0.AND.ICALL.NE.1) KELMNTS = ROLLTOT                CUT1      40
165                   DO 30 K=1,KELMNTS                                                 CUT1      41
                      I = K                                                             OUT1      42
                      IF (ICHARTS.NE.0.AND.ICALL.NE.1) I = ROLLSL(K)                    CUT1      43
              C                                                                         CUT1      44
              C                 CHECK FOR PAGE BREAKS FOR NEW HEADINGS                  CUT1      45
170           C                                                                         CUT1      46
              C LINE 1 OR WBS ELEMENT 1 ALWAYS FORCES A PAGE BREAK!                     CUT1      47
```

```
C EACH WBS ELEMENT WHICH IMMEDIATELY FOLLOWS ONE OF THE LINE NUMBERS      OUT1      48
C SPECIFIED IN THE "IPB" ARRAY FORCES A PAGE BREAK:                       OUT1      49
C TO FORCE FEWER PAGE BREAKS SET TWO OR MORE MEMBERS OF "IPB"             OUT1      50
C EQUAL TO THE SAME LINE NUMBER (IN BLOCK DATA "INIT"):                   OUT1      51
C TO SUPPRESS ALL PAGE BREAKS OTHER THAN LINE 1 ON WBS ELEMENT 1          OUT1      52
C SET ALL 3 "IPB" VALUES EQUAL TO 1.                                      OUT1      53
C                                                                         OUT1      54
      IF ( I .EQ. 1 ) GO TO 10                                            OUT1      55
      IF ( I .EQ. (IPB(1) + 1 ) ) GO TO 10                                OUT1      56
      IF ( I. EQ. (IPB(2) + 1 ) ) GO TO 10                                OUT1      57
      IF ( I. EQ. (IPB(3) + 1 ) ) GO TO 10                                OUT1      58
      GO TO 20                                                            OUT1      59
C                                                                         OUT1      60
   10 CONTINUE                                                            OUT1      61
C                                                                         OUT1      62
C               OUTPUT HEADINGS                                           OUT1      63
      IPG = IPG + 1                                                       OUT1      64
      CALL HEAD                                                           OUT1      65
C                                                                         OUT1      66
      GO TO (60,40,50) ICALL                                              OUT1      67
   40 CONTINUE                                                            OUT1      68
      WRITE (6,105) IMINUS,KSC(1),KSC(2)                                  OUT1      69
      WRITE (6,106) IBLANK,FLEETZ                                         OUT1      70
      GO TO 70                                                            OUT1      71
   50 CONTINUE                                                            OUT1      72
      WRITE (6,107) IMINUS                                                OUT1      73
      WRITE (6,106) IBLANK,FLEETZ                                         OUT1      74
      GO TO 70                                                            OUT1      75
   60 CONTINUE                                                            OUT1      76
      WRITE (6,101) IMINUS                                                OUT1      77
      WRITE(6,102) IBLANK, FLEETZ                                         OUT1      78
   70 CONTINUE                                                            OUT1      79
      WRITE(6,103) IBLANK,IPHASE(1,IPG),IPHASE(2,IPG)                     OUT1      80
      WRITE (6,104) IBLANK                                                OUT1      81
      WRITE (6,114) IBLANK                                                OUT1      82
C                                                                         OUT1      83
      IF ( IFLGCL .NE. 1 ) WRITE (6,FMT110) (KPR(J),J=1,KC), (KPR(J),     OUT1      84
     1J=11,K1), ITOTAL                                                    OUT1      85
      IF ( IFLGCL .EQ. 1 ) WRITE (6,FMT110) (KPR(J),J=1,KC), (KPR(J),     OUT1      86
     1J=11,K1)                                                            OUT1      87
C                                                                         OUT1      88
C               OUTPUT THE WBS COST ELEMENT FOR THESE COMPONENTS          OUT1      89
   20 CONTINUE                                                            OUT1      90
      IF ( IFLGCL .NE. 1 ) WRITE (6,FMT120) (IWORD(I,N),N=1,5),           OUT1      91
     1(AWORD(I,N),N=1,KCT), TOT(I)                                        OUT1      92
      IF(IFLGCL.EQ.1) GO TO 200                                           OUT1      93
      IF (ICALL.NE.1) GO TO 201                                           OUT1      94
      IF(I.EC.(IPH(3) - 1)) WRITE(6,FMT123) IZERO,(KWORC(N),N=1,3),       OUT1      95
     1(UNITFLY(N),N=1,KCT),TOTUFLY                                        OUT1      96
      GO TO 203                                                           OUT1      97
  201 IF(I.EC.(IPH(3)-1)) WRITE(6,FMT123) IZERO, (JWORC(N),N=1,3),        OUT1      98
     1(SHIPFLY(N),N=1,KCT),TOTSHIP                                        OUT1      99
  200 CONTINUE                                                            OUT1     100
      IF ( IFLGCL .EQ. 1 ) WRITE (6,FMT120) (IWORD(I,N),N=1,5),           OUT1     101
     1(AWORD(I,N),N=1,KCT)                                                OUT1     102
      IF(IFLGCL.NE.1) GO TO 30                                            OUT1     103
      IF (ICALL.NE.1) GO TO 202                                           OUT1     104
```

```
      SUBROUTINE OUT1       74/74   OPT=2                    FTN 4.6+433        07/31/79  23.53.41

                  IF(I.EQ.(IPH(3)-1)) WRITE(6,FMT123) IZERO, (KWORD(N),N=1,3),      OUT1      105
230               1(UNITFLY(N),N=1,KCT)                                             OUT1      106
                  GO TO 30                                                          OUT1      107
                202 IF(I.EQ.(IPH(3)-1)) WRITE(6,FMT123) IZERO, (JWORC(N),N=1,3),    OUT1      108
                  1(SHIPFLY(N),N=1,KCT)                                             OUT1      109
            C                                                                       OUT1      110
235               3) CONTINUE                                                       OUT1      111
            C                                                                       OUT1      112
                  DO 80 M=1,5                                                       OUT1      113
                  WRITE(6,124) (FNOTES(M,L),L=1,12)                                 OUT1      114
                 80 CONTINUE                                                        OUT1      115
240             124 FORMAT(1HO,8X,12A10)                                            OUT1      116
                  RETURN                                                            OUT1      117
                  END                                                               OUT1      118
```

APPENDIX B

INPUT FORMAT GUIDE

This input format guide provides the user with a summary of the format for the input file to SAFSCAM. The input variables are named as they are read by the READ statements in the INPUPD subroutine and will vary slightly from the descriptive names given in the main text.

Card Types	Input	Card Columns	Format
1	TITLE Identifies case run	1-26	2A10,A6
2	NWBS number of cost elements in CBS	1-5	I5
	NPH number of phases in CBS	6-10	I5
	IPB (1) page break	11-15	I5
	IPB (2) page break	16-20	I5
	IPB (3) page break	21-25	I5
3	IPHASE (1,K) name of Kth phase in 2 words	1-10	A10
	IPHASE (2,K)	11-20	A10
	IPH (K) first CBS element of Kth phase	21-25	I5
	NROLL (K) lowest cost level of Kth phase	26-30	I5
	(Up to four card type 3s may be used, one for each of 4 phases, K = 1, 4)		
4	INP(1) SYSTEM	1-6	A6*
	INP(2) System name	11-20	A10
5	INP(1) TPUT	1-4	A4*
6	INP(3) CBS element number	1-20	A10
	INP(3) budget appropriation code	21-30	
	INP(4) CBS element name	31-40	A10
	INP(5) CBS element name	41-50	A10
	INP(6) CBS element name	51-60	A10
	INP(7) CBS element number	61-70	A10
	INP(8) cost level	71-72	A2*
7	INP(1) NPUT	1-4	A4*
8	INP(1) SHIPCLASS	1-10	A10
	INP(2) first word of ship class name (centered)	11-17	A-7*
	INP(3) second word of ship class name	21-27	A-7*
9	INP(1) Equipment	1-10	A10
	INP(2) first word of equipment element name - centered	11-17	A7*

Card Types	Input	Card Columns	Format
	INP(3) second word of equipment name - centered	21-27	A7*
	INP(4) -----	30-40	A10
	INP(5) O&S quantity per ship	41-45	A-5*
	INP(6) INV. quantity per ship	51-59	A-9*
	INP(7) appropriation code for Proc breakdown ("SCN", "OPN", or "WPN")	61-63	A-3*
10	INP(1) SEND	1-4	A-4*
11	INP(1) EQUIPMENT	1-10	A10
	INP(2) first word equipment elevation name	11-30	A10
	INP(3) second word equipment elevation name	31-40	A10
12	INP(1) TPUT	1-4	A-4
13	INP(1) CBS element number	1-20	A10
	INP(3) CBS element cost	21-30	A10
	INP(4) CBS element cost	31-40	A10
	INP(5) CBS element cost	41-50	A10
	INP(6) CBS element cost	51-60	A10
	INP(7) CBS element cost	61-70	A10
	INP(8) CBS element cost	71-80	A10
14	INP(1) CER	1-3	A-3
15-a	CEREND (blank)	1-4	A-5
	EFORSI "F" or "C" caculation type F = Factor, C = CBS element or subelement	6	A-1
	ROWID factor or CBS element number	7-9	I3
	ADDID CBS subelement number 0 - a factor or number subelement 1 - 6 = a subelement	10	I1
	CERNO CER number	11-15	I5
	XREFNO CBS element cross-reference number	16-19	I4
	XREFAD CBS subelement cross-reference number (0 = no subelement, 1 - 6 = a subelement)	20	I1

		FS(11)	PS(11)	
FS(II)	P(1) factor identification	21,	22-30	6(A1,F9.0)
	P(2) (F = factor, blank = value)	31,	32-40	
PS(II)	P(3) parameter	41,	42-50	
	P(4)	51,	52-60	
	P(5)	61,	62-70	
	P(6)	71,	72-80	

Card Types	Input	Card Columns	Format
15-b	CEREND ECER	1-4	A-5
16	INP(1) $END	1-4	A-4
17	INP(1)-INP(8) comment card for chart control	1-80	8A10
18	CHRTCNT(1) print control for: equipment LCC fleet summary chart (0 = print chart)	1-3	I-3
	CHRTCNT(2) print control for: unit ship cost by equipment chart (0 - print chart)	4-6	I-3
	CHRTCNT(3) print control for: ship cost summary (0 = print chart)	7-9	I-3
	CHRTCNT(4) print control for: LCC by budget (0 = print chart)	10-12	I-3
	CHRTCNT(5) cost level print control (0 = print complete CBS)	13-15	I-3
19	INP(1)-INP(8) comment card for equipment installation	1-80	8A10
20	NOYRS numbers of years in ship installation table	1-5	I5
		6-11	6X
	IYEARS(1) first year for installation	12-16	I5
	IYEARS(2)	17-60	I5
	.	(etc)	.
	.	(etc)	.
	.	(etc)	.
	IYEARS(12) 12th year for installation	67-72	I5
21	SINSTB(I,1) ship class name (left-justified)	1-6	A-6
	SINSTB (I,2) number of ships outfitted first year	11-15	12I5
	SINSTB(I,13) number of ships outfitted 12th years	66-70	
	(A type 12 installation card is input for each ship. Numbers for ship to be outfitted may be input for up to 12 years).		
22	INP(1)-INP(8) comment card for unit flyaway cost data	1-80	8A10

Card Types	Input	Card Columns	Format
23	NOFLY number of flyaway elements to be included in unit flyaway cost	1-5	I5
24	IFLYROW(1) CBS element number for unit flyaway:	1-5	16I5
	IFLYROW(16)	76-80	
25	FNOTES (1,12)	1-80	8A10
	.	1-40	4A10
	.		
	.		
	FNOTES (5,12)	1-80	8A10
		1-40	4A10
	(Must have 10 cards for footnotes) Blank cards may be used.		

* Format for the READ is A10; however, other restrictions place the limit of the format as indicated.

APPENDIX C

SAMPLE RUN

CARD INPUT LISTING

```
TESTCASE DATA
  148    4   35   68  108
      R D T & E          1    2
  PILCT PRODUCTICN      36    3
   FULL PRODUCTION      69    3
OPERATICN & SUPPORT    109    2
SYSTEM    SLCCM
TPUT
(  1)                          RDT&E PHASE                    1        1
(  2)                            VALIDATICN                   2        2
(  3)                              CONTRACTOR                 3        3
(  4)                RD/OM           SYSTEM/PROGRAM MGT       4        4
(  5)                RDTE            SYSTEMS ENGINEERING      5        4
(  6)                RDTE            TEST HARDWARE FAB        6        4
(  7)                RDTE            DEVELCPMENT T&E          7        4
(  8)                RD/MC           INDUSTRIAL FACILITIES    8        4
(  9)                RDTE            DATA                     9        4
( 10)                RDTE            OTHER                    10       4
( 11)                              GOVERNMENT                 11       3
( 12)                RD/OM           SYSTEM/PROGRAM MGT       12       4
( 13)                RDTE            SYSTEMS ENGINEERING      13       4
( 14)                RDTE            TEST HARDWARE FAB        14       4
( 15)                RDTE            DEVELOPMENT T&E          15       4
( 16)                RD/MC           INDUSTRIAL FACILITIES    16       4
( 17)                RDTE            DATA                     17       4
( 18)                RDTE            OTHER                    18       4
( 19)                            FULL SCALE DEVELCPMENT       19       2
( 20)                              CONTRACTOR                 20       3
( 21)                RD/CM           SYS/PRCG/LCG SUPT MGT    21       4
( 22)                RDTE            SYSTEMS ENGINEERING      22       4
( 23)                RDTE            TEST HARDWARE FAB        23       4
( 24)                RDTE            PROTOTYPE TESTS          24       4
( 25)                RD/MC           TOOLING AND IND FAC      25       4
( 26)                RDTE            DATA                     26       4
( 27)                RDTE            OTHER                    27       4
( 28)                              GOVERNMENT                 28       3
( 29)                RD/OM           SYS/PROG/LOG SUPT MGT    29       4
( 30)                RDTE            SYSTEMS ENGINEERING      30       4
( 31)                RDTE            TEST HARDWARE FAB        31       4
( 32)                RDTE            PROTOTYPE TESTS          32       4
( 33)                RD/MC           TOOLING ANC IND FAC      33       4
( 34)                RDTE            DATA                     34       4
( 35)                RDTE            OTHER                    35       4
( 36)                          INVESTMENT PHASE               36       1
( 37)                            PILOT/LIMITED PRODUCTICN     37       2
( 38)                              NONRECURRING               38       3
( 39)                                CONTRACTOR               39       4
( 40)                PR/OM             SYSTEM/PROGRAM MGT     40       5
( 41)                PROC              ADV PRODUCTION ENG     41       5
( 42)                PR/OM             SYSTEM T&E             42       5
( 43)                PRCC              LOGISTIC SUPPORT       43       5
( 44)                PR/MC             TOOLING AND IND FAC    44       5
( 45)                PR/CM             DATA                   45       5
( 46)                PR/CM             INITIAL TRAINING       46       5
( 47)                PROC              OTHER                  47       5
```

(48)		GOVERNMENT	48	4
(49)	PR/CM	SYSTEM/PROGRAM MGT	49	5
(50)	PR/CM	SYSTEM T&E	50	5
(51)	PROC	LOGISTIC SUPPORT	51	5
(52)	PR/MC	TOOLING AND IND FAC	52	5
(53)	PR/OM	DATA	53	5
(54)	PR/CM	INITIAL TRAINING	54	5
(55)	PROC	OTHER	55	5
(56)		RECURRING	56	3
(57)		CONTRACTOR	57	4
(58)	PROC	MISSION HARDWARE PROD	58	5
(59)	PROC	ECP/ECO	59	5
(60)	PR/OM	1ST DEST TRANS/PKG	60	5
(61)	PROC	RIP-OUT,INSTALL,INTEG	61	5
(62)	PROC	OTHER	62	5
(63)		GOVERNMENT	63	4
(64)	PROC	MISSION HARDWARE PROD	64	5
(65)	PROC	ECP/ECO	65	5
(66)	PR/OM	1ST DEST TRANS/PKG	66	5
(67)	PROC	RIP-OUT,INSTALL,INTEG	67	5
(68)	PROC	OTHER	68	5
(69)		FULL PRODUCTION	69	2
(70)		NONRECURRING	70	3
(71)		CONTRACTOR	71	4
(72)	PR/OM	SYSTEM/PROGRAM MGT	72	5
(73)	PROC	PRODUCTION ENGINEERING	73	5
(74)	PR/OM	SYSTEM T&E	74	5
(75)	PROC	LOGISTICS SUPPORT	75	5
(76)	PR/MC	OPERATIONAL SITE ACT	76	5
(77)	PR/MC	TOOLING AND IND FAC	77	5
(78)	PR/OM	DATA	78	5
(79)	PR/CM	INITIAL TRAINING	79	5
(80)	PROC	OTHER	80	5
(81)		GOVERNMENT	81	4
(82)	PR/CM	SYSTEM/PROGRAM MGT	82	5
(83)	PR/OM	SYSTEM T&E	83	5
(84)	PROC	LOGISTICS SUPPORT	84	5
(85)	PR/MC	OPERATIONAL SITE ACT	85	5
(86)	PR/MC	TOOLING AND IND FAC	86	5
(87)	PR/OM	DATA	87	5
(88)	PR/CM	INITIAL TRAINING	88	5
(89)	PROC	OTHER	89	5
(90)		RECURRING	90	3
(91)		CONTRACTOR	91	4
(92)	PROC	MISSION HARDWARE PROD	92	5
(93)	PR/OM	INITIAL SPARES	93	5
(94)	PROC	SUSTAINING ENGINEERING	94	5
(95)	PROC	ECP/ECO	95	5
(96)	PR/CM	1ST DEST TRANS/PKG	96	5
(97)	PROC	SUST TOOL, TEST EQUIP	97	5
(98)	PROC	RIP-OUT,INSTALL,INTEG	98	5
(99)	PROC	OTHER	99	5
(100)		GOVERNMENT	100	4
(101)	PROC	MISSION HARDWARE PROD	101	5
(102)	PR/OM	INITIAL SPARES	102	5
(103)	PROC	SUSTAINING ENGINEERING	103	5
(104)	PROC	ECP/ECO	104	5
(105)	PR/OM	1ST DEST TRANS/PKG	105	5
(106)	PROC	SUST TOOL, TEST EQUIP	106	5
(107)	PROC	RIP-OUT,INSTALL,INTEG	107	5
(108)	PROC	OTHER	108	5

```
(109)                          OPERATIONS AND SUPPORT PHASE  109      1
(110)                            OPERATIONS                  110      2
(111)                              CONTRACTOR                111      3
(112)                CMN             CONSUMABLES             112      4
(113)                CMN             OTHER                   113      4
(114)                              GOVERNMENT                114      3
(115)                OM/MP           ORGANIZATIONAL PERSONNEL115      4
(116)                CMN             EQUIPMENT LEASEHOLD     116      4
(117)                CM/MC           OPERATIONAL FACILITIES  117      4
(118)                CMN             CONSUMABLES             118      4
(119)                CMN             OTHER                   119      4
(120)                            LOGISTIC SUPPORT            120      2
(121)                              CONTRACTOR                121      3
(122)                CMN             SYSTEM ILS MANAGEMENT   122      4
(123)                CMN             SYS ENG, FIELD SERVICE  123      4
(124)                                SUPPLY                  124      4
(125)                PR/OM             SPARE PARTS,REPAIR MAT125      5
(126)                CMN               TRANS AND PACKAGING   126      5
(127)                CMN             DATA AND DOCUMENTATION  127      4
(128)                CMN             OTHER ILS               128      4
(129)                              GOVERNMENT                129      3
(130)                CMN             SYSTEM ILS MANAGEMENT   130      4
(131)                                MAINTENANCE             131      4
(132)                OM/MC             MAINTENANCE FACILITIES132      5
(133)                CM/MP             MAINTENANCE PERSONNEL 133      5
(134)                CMN               SUPPORT EQUIP MAINT   134      5
(135)                CMN             SYS ENG, FIELD SERVICE  135      4
(136)                                SUPPLY                  136      4
(137)                CM/MP             SUPPLY PERSONNEL      137      5
(138)                CM/MC             SUPPLY FACILITIES     138      5
(139)                PR/OM             SPARE PARTS,REPAIR MAT139      5
(140)                CMN               INVENTORY ADMIN       140      5
(141)                CMN               TRANS AND PACKAGING   141      5
(142)                CMN             DATA AND DOCUMENTATION  142      4
(143)                CMN             OTHER ILS               143      4
(144)                CMN          CONTRACTOR - TRAINING      144      2
(145)                CMN          GOVERNMENT - TRAINING      145      2
(146)                CMN          CONTRACTOR - OTHER         146      2
(147)                CMN          GOVERNMENT - OTHER         147      2
(148)                          TOTAL                        148      1
NPUT
SHIPCLASS   HOC
EQUIPMENT  FIRST     RADAR          1          1          SCN
EQUIPMENT SECOND     RADAR          2          1          SCN
EQUIPMENT MISSILE                  20         20          SCN
SHIPCLASS   FFX
EQUIPMENT  FIRST     RADAR          1          1          WPN
EQUIPMENT SECOND     RADAR          2          0          OPN
EQUIPMENT MISSILE                  20         20          WPN
SHIPCLASS DD-963
EQUIPMENT  FIRST     RADAR          1          1          WPN
EQUIPMENT SECOND     RADAR          2          1          OPN
EQUIPMENT MISSILE                  20         0          WPN
SHIPCLASS   AOE
EQUIPMENT  FIRST     RADAR          1          1          SCN
EQUIPMENT SECOND     RADAR          1          1          SCN
EQUIPMENT MISSILE                  20         10          SCN
SHIPCLASS ZIPGUN
EQUIPMENT  FIRST     RADAR          1          1          OPN
EQUIPMENT SECOND     RADAR          5          3          WPN
SHIPCLASS BOOMER
EQUIPMENT  FIRST     RADAR          1          1          WPN
EQUIPMENT MISSILE                  40         10          SCN
$END
```

```
(25-27)              3.65       1.35       2.6
(29-38)              1.2        7.
(33-35)              3.         1.         1.5
*INVESTMENT PHASE
*PILOT / LIMITED PRODUCTION
*NONRECURRING - CONTRACTOR
(41)                 10.
(43-47)              2.         10.        2.         1.         5.
*NONRECURRING - GOVERNMENT
(50-55)              10.        1.         3.         1.         4.         2.
*RECURRING - CONTRACTOR
(59-62)              1.         .1         3.2        .1
*RECURRING - GOVERNMENT
(65-68)              1.         .1         .8         .1
*FULL PRODUCTION
*NONRECURRING - CONTRACTOR
(72-76)              5.6        12.3       2.5        1.         1.
(78-88)              4.2        3.3        4.
*NONRECURRING - GOVERNMENT
(82-85)              2.4        .86        1.         1.
(87-89)              1.5        1.2        2.
*RECURRING - CONTRACTOR
(94-99)              1.         2.         2.4        1.6        5.2        1.
*RECURRING - GOVERNMENT
(103-108)            1.         2.         1.05       .7         20.8       1.
*OPERATIONS AND SUPPORT PHASE
*OPERATIONS - CONTRACTOR
(113)                5.
*OPERATIONS - GOVERNMENT
(116-117)            10.        3.
(119)                10.
*LOGISTIC SUPPORT - CONTRACTOR
(122-123)            1.5        1.3
(125-128)            10.        1.         1.4        1.
*LOGISTIC SUPPORT - GOVERNMENT
(130)                4.
(132-135)            7.2        6.         1.         3.2
(137-142)            3.         3.6        10.        2.3        1.         1.5
(143-147)            1.                    4.6        1.5        1.5
NPUT
GER
     C  60   18   00        .050000      11.200000      1.000000       5.700010       0.000000       0.000000
     C 140   18   00        .050000      11.200000      1.000000      12.000000       0.000000       0.000000
     C 230   18   00        .025000      10.000000      1.000000      40.000000       0.000000       0.000000
     C 240   12   00        .050000      40.000000      1.000000       1.000000       0.000000       0.000000
     C 310   18   00        .025000      10.000000      1.000000      20.000000       0.000000       0.000000
     C 320   12   00        .050000      20.000038      1.000000       1.000000       0.000000       0.000000
     C 400   12   00      100.000000       .050000      1.000000       1.000000       0.000000       0.000000
     C 420   12   00        1.500000       2.000000     10.000000       1.000000       0.000000       0.000000
     C 490   12   00       50.000000       .050000      1.000000       1.000000       0.000000       0.000000
     C 580    1   00        1.400000       .848000      0.000000       0.000000       0.000000       0.000000
     C 640    1   00        .600000       .848000      0.000000       0.000000       0.000000       0.000000
     C 770   10   00        .009800       .934000      1.140000       2.100000        .440000       0.000000
     C 860   10   00        .084200       .934000      1.140000       2.100000        .440000       0.000000
     C 920    4   00        1.400000     150.000000       .848000      0.000000       0.000000       0.000000
     C 930    8  920        .050000       0.000000      0.000000      0.000000       0.000000       0.000000
     C1010    4   00        .600000     150.000000       .848000      0.000000       0.000000       0.000000
     C1020    8 1010        .056000       0.000000      0.000000      0.000000       0.000000       0.000000
     C1120    8  920        .120000       0.000000      0.000000      0.000000       0.000000       0.000000
     C1150   12   00       10.000000       1.000000       .030000    150.000000       0.000000       0.000000
     C1180    8 1010        .120000       0.000000      0.000000      0.000000       0.000000       0.000000
ECER
```

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EQUIPMENT  SECOND    RADAR
TPUT
*ROTLE PHASE
*VALIDATION - CONTRACTOR
(4-5)                   .8          16.
(7-10)                  8.          2.72        1.2         .6
*VALIDATION - GOVERNMENT
(12-13)                 3.2         16.
(15-18)                 8.8         .8          .8          .8
*FULL SCALE DEVELOPMENT - CONTRACTOR
(21-22)                 3.04        12.4
(25-27)                 2.92        1.68        2.08
(29-30)                 .96         5.6
(33-35)                 2.4         .8          1.2
*INVESTMENT PHASE
*PILOT / LIMITED PRODUCTION
*NONRECURRING - CONTRACTOR
(41)                    8.
(43-47)                 1.6         8.          1.6         .8          4.
*NONRECURRING - GOVERNMENT
(50-55)                 8.          .8          2.4         .8          3.2         1.6
*RECURRING - CONTRACTOR
(59-62)                 .8          .08         2.56        .08
*RECURRING - GOVERNMENT
(65-68)                 .8          .08         .64         .08
*FULL PRODUCTION
*NONRECURRING - CONTRACTOR
(72-76)                 4.48        9.84        2.          .8          .8
(78-80)                 3.36        2.64        3.2
*NONRECURRING - GOVERNMENT
(82-85)                 1.92        .69         .8          .8
(87-89)                 1.2         .96         1.6
*RECURRING - CONTRACTOR
(94-99)                 .8          1.6         1.92        1.28        4.16        .8
*RECURRING - GOVERNMENT
(103-108)               .8          1.6         .84         .56         16.64       .8
*OPERATIONS AND SUPPORT PHASE
*OPERATIONS - CONTRACTOR
(113)                   4.
*OPERATIONS - GOVERNMENT
(116-117)               8.          2.4
(119)                   .8
*LOGISTIC SUPPORT - CONTRACTOR
(122-123)               1.2         1.04
(125-128)               8.          .8          1.12        .8
*LOGISTIC SUPPORT - GOVERNMENT
(130)                   3.2
(132-135)               5.76        4.8         .8          2.56
(137-142)               2.4         2.88        8.          1.84        .8          1.2
(143-147)               .8                      3.68        1.2         1.2
NPUT
OER
     C  60   18   00        .050000       3.000000       0.000000       0.000000       0.000000       0.000000
     C 140   18   00        .050000      11.200000        .800000      12.000000       0.000000       0.000000
     C 230   18   00        .025000      10.000000        .800000      40.000000       0.000000       0.000000
     C 240   12   00        .040000      40.000000       1.000000       1.600000       0.000000       0.000000
     C 310   18   00        .025000      10.000000        .800000      24.000000       0.000000       0.000000
     C 320   12   00        .040000      20.000000       1.000000       1.600000       0.000000       0.000000
     C 400   12   00      60.000000        .050000       1.000000       1.000000       0.000000       0.000000
     C 420   12   00       1.500000       1.600000      10.000000       1.000000       0.000000       0.000000
     C 490   12   00      40.000000        .050000       1.000000       1.000000       0.000000       0.000000
     C 580    1   00       1.120000        .848000       0.000000       0.000000       0.000000       0.000000
     C 640    1   00        .480000        .848000       0.000000       0.000000       0.000000       0.000000
     C 770   10   00        .019800        .747000       1.140000       2.100000        .440000       0.000000
     C 860   10   00        .004200        .747000       1.140000       2.100000        .440000       0.000000
     C 920    4   00       1.120000      15.000000        .848000       0.000000       0.000000       0.000000
     C 930    8  920        .050000       0.000000       0.000000       0.000000       0.000000       0.000000
     C1010    4   00        .480000      15.000000        .848000       0.000000       0.000000       0.000000
     C1020    8 1010        .050000       0.000000       0.000000       0.000000       0.000000       0.000000
     C1120    8  920        .120000       0.000000       0.000000       0.000000       0.000000       0.000000
     C1150   12   00      10.000000       1.000000        .030000      15.000000       0.000000       0.000000
     C1180    8 1010        .120000       0.000000       0.000000       0.000000       0.000000       0.000000
EGER
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EQUIPMENT MISSILE
TPUT
*RDT&E PHASE
*VALIDATION - CONTRACTOR
(4-5)                 1.        4.
(7-10)                2.        .68       .3        1.5
*VALIDATION - GOVERNMENT
(12-13)               .8        4.
(15-18)               2.2       .2        .2        .2
*FULL SCALE DEVELOPMENT - CONTRACTOR
(21-22)               .76       3.1
(25-27)               .73       .27       .56
(29-30)               .24       1.4
(33-35)               .6        .2        .3
*INVESTMENT PHASE
*PILOT / LIMITED PRODUCTION
*NONRECURRING - CONTRACTOR
(41)                  2.
(43-47)               .4        2.        .4        .2        1.
*NONRECURRING - GOVERNMENT
(50-55)               2.        .2        .6        .2        .8        .4
*RECURRING - CONTRACTOR
(59-62)               .2        .02       .64       .02
*RECURRING - GOVERNMENT
(65-68)               .2        .02       .16       .02
*FULL PRODUCTION
*NONRECURRING - CONTRACTOR
(72-76)               1.12      2.46      .5        .2        .2
(78-80)               .84       .66       .8
*NONRECURRING - GOVERNMENT
(82-85)               .48       .17       .2        .2
(87-89)               .3        .24       .4
*RECURRING - CONTRACTOR
(94-99)               .2        .4        11.       7.3       1.04      .2
*RECURRING - GOVERNMENT
(103-108)             .2        .4        4.7       3.1       4.16      .2
*OPERATIONS AND SUPPORT PHASE
*OPERATIONS - CONTRACTOR
(113)                 1.
*OPERATIONS - GOVERNMENT
(116-117)             2.        1.5
(119)                 2.
*LOGISTIC SUPPORT - CONTRACTOR
(122-123)             .3        .26
(125-128)             2.        .2        .28       .2
*LOGISTIC SUPPORT - GOVERNMENT
(130)                 .8
(132-135)             1.44      1.2       .2        .64
(137-142)             .6        .72       2.        .46       .2        .3
(143-147)             .2                  .92       .3        .3
NPUT
CER
     F  10   10   00        .000073       9.790000        .970000     70.000000      1.000000      0.000000
     F  20    3   00 F     1.000000       1.000000        .766000    500.000000     -.234000      0.000000
     F  30   10   00        .066000   30000.000000        .610000      1.000000      1.000000      0.000000
     F  40    3   00 F     3.000000       1.000000        .848000   1000.000000     -.152000      0.000000
     F  50   10   00 F     2.000000    1000.000000       -.234000      1.000000      1.000000      0.000000
     C  60   18   00        .050000      11.200000        .500000      5.000000      0.000000      0.000000
     C 140   18   00        .050000      11.200000        .500000     12.000000      0.000000      0.000000
     C 231   18   00        .090000       9.900000 F     5.000000     10.000000      0.000000      0.000000
     C 232   18   00        .040000       5.200000 F     3.000000     10.000000      0.000000      0.000000
     C 240   12   00        .025000      40.000000       1.000000      1.000000      0.000000      0.000000
     C 310   18   00        .025000      10.000000        .500000     20.000000      0.000000      0.000000
     C 320   12   00        .025000      20.000000       1.000000      1.000000      0.000000      0.000000
     C 400   12   00      50.000000        .050000       1.000000      1.000000      0.000000      0.000000
     C 420   12   00       1.500000       1.000000      10.000000      1.000000      0.000000      0.000000
     C 490   12   00      25.000000        .050000       1.000000      1.000000      0.000000      0.000000
     C 580    1   00        .700000        .848000       0.000000      0.000000      0.000000      0.000000
     C 640    1   00        .300000        .848000       0.000000      0.000000      0.000000      0.000000
     C 770   10   00        .009800        .467000       1.140000      2.100000       .440000      0.000000
     C 860   10   00        .004200        .467000       1.140000      2.100000       .440000      0.000000
     C 921    4   00 F     2.000000     150.000000        .766000      0.000000      0.000000      0.000000
     C 922    4   00 F     4.000000     300.000000        .848000      0.000000      0.000000      0.000000
     C 930   15   00      91.000000 F     5.000000 F     3.000000      0.000000      0.000000      0.000000
     C1010    4   00        .300000     150.000000        .848000      0.000000      0.000000      0.000000
     C1020    8 1010        .050000       0.000000       0.000000      0.000000      0.000000      0.000000
     C1120    8  920        .120000       0.000000       0.000000      0.000000      0.000000      0.000000
     C1150   12   00      10.000000       2.000000        .030000    150.000000      0.000000      0.000000
     C1180    8 1010        .120000       0.000000       0.000000      0.000000      0.000000      0.000000
     C1391    8  921        .250000       0.000000       0.000000      0.000000      0.000000      0.000000
     C1392    8  922        .500000       0.000000       0.000000      0.000000      0.000000      0.000000
ECER
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$END
*CHART CONTROL
  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0
* SHIP INSTALLATION SCHEDULE - BASED ON 10 SHIPS AND 6 YEARS
   6 YEARS: 1985 1986 1987 1988 1989 1990
HOC              1    0    0    0    0    0
FFX              0    2    0    0    0    0
DD-963           0    0    1    0    0    0
AOE              0    0    0    2    0    0
ZIPGUN           0    0    0    0    2    0
BOOMER           0    0    0    0    0    2
*FLYAWAY DATA: LISTING OF 11 CBS ELEMENTS INCLUDED IN FLYAWAY COSTS
   11
   72   73   74   77   80   92   94   95   96   97   99
FOOTNOTE 1
FOOTNOTE 2
```

SLCCM
TESTCASE DATA

08/01/79
00.07.10.

FORMATTED LISTING OF INPUT FILE FROM "DATAOP"

AFFRO	CODE	COST ELEMENT		ROLLUP
1		RDT&E PHASE	1	1
2		VALIDATION	2	2
3		CONTRACTOR	3	3
4	RD/OM	SYSTEM/PROGRAM MGT	4	4
5	RDTE	SYSTEMS ENGINEERING	5	4
6	RDTE	TEST HARDWARE FAB	6	4
7	RDTE	DEVELOPMENT T&E	7	4
8	RD/MC	INDUSTRIAL FACILITIES	8	4
9	RDTE	DATA	9	4
10	RDTE	OTHER	10	4
11		GOVERNMENT	11	3
12	RD/OM	SYSTEM/PROGRAM MGT	12	4
13	RDTE	SYSTEMS ENGINEERING	13	4
14	RDTE	TEST HARDWARE FAB	14	4
15	RDTE	DEVELOPMENT T&E	15	4
16	RD/MC	INDUSTRIAL FACILITIES	16	4
17	RDTE	DATA	17	4
18	RDTE	OTHER	18	4
19		FULL SCALE DEVELOPMENT	19	2
20		CONTRACTOR	20	3
21	RD/OM	SYS/PRCG/LOG SUPT MGT	21	4
22	RDTE	SYSTEMS ENGINEERING	22	4
23	RDTE	TEST HARDWARE FAB	23	4
24	RDTE	PROTOTYPE TESTS	24	4
25	RD/MC	TOOLING AND IND FAC	25	4
26	RDTE	DATA	26	4
27	RDTE	OTHER	27	4
28		GOVERNMENT	28	3
29	RD/OM	SYS/PRCG/LOG SUPT MGT	29	4
30	RDTE	SYSTEMS ENGINEERING	30	4
31	RDTE	TEST HARDWARE FAB	31	4
32	RDTE	PROTOTYPE TESTS	32	4
33	RD/MC	TOOLING AND IND FAC	33	4
34	RDTE	DATA	34	4
35	RDTE	OTHER	35	4

APPRO	CODE	COST ELEMENT		ROLLUP
36		INVESTMENT PHASE	36	1
37		FILCT/LIMITED PRODUCTION	37	2
38		NONRECURRING	38	3
39		CONTRACTOR	39	4
40	PR/CM	SYSTEM/PROGRAM MGT	40	5
41	PROC	ADV PRODUCTION ENG	41	5
42	PR/CM	SYSTEM T&E	42	5
43	PROC	LOGISTIC SUPPORT	43	5
44	PR/MC	TOOLING AND IND FAC	44	5
45	PR/OM	DATA	45	5
46	PR/OM	INITIAL TRAINING	46	5
47	PROC	OTHER	47	5
48		GOVERNMENT	48	4
49	PR/CM	SYSTEM/PROGRAM MGT	49	5
50	PR/CM	SYSTEM T&E	50	5
51	PROC	LOGISTIC SUPPORT	51	5
52	PR/MC	TOOLING AND IND FAC	52	5
53	PR/OM	DATA	53	5
54	PR/OM	INITIAL TRAINING	54	5
55	PROC	OTHER	55	5
56		RECURRING	56	3
57		CONTRACTOR	57	4
58	PROC	MISSION HARDWARE PROD	58	5
59	PROC	ECP/ECO	59	5
60	PR/OM	1ST DEST TRANS/PKG	60	5
61	PROC	RIP-OUT,INSTALL,INTEG	61	5
62	PROC	OTHER	62	5
63		GOVERNMENT	63	4
64	PROC	MISSION HARDWARE PROD	64	5
65	PROC	ECP/ECO	65	5
66	PR/OM	1ST DEST TRANS/PKG	66	5
67	PROC	RIP-OUT,INSTALL,INTEG	67	5
68	PROC	OTHER	68	5

APPRO	CODE	COST ELEMENT		ROLLUP
69		FULL PRODUCTION	69	2
70		NONRECURRING	70	3
71		CONTRACTOR	71	4
72	PR/OM	SYSTEM/PROGRAM MGT	72	5
73	PROC	PRODUCTION ENGINEERING	73	5
74	PR/CM	SYSTEM T&E	74	5
75	PROC	LOGISTICS SUPPORT	75	5
76	PR/MC	OPERATIONAL SITE ACT	76	5
77	PR/MC	TOOLING AND IND FAC	77	5
78	PR/CM	DATA	78	5
79	PR/OM	INITIAL TRAINING	79	5
80	PROC	OTHER	80	5
81		GOVERNMENT	81	4
82	PR/OM	SYSTEM/PROGRAM MGT	82	5
83	PR/CM	SYSTEM T&E	83	5
84	PROC	LOGISTICS SUPPORT	84	5
85	PR/MC	OPERATIONAL SITE ACT	85	5
86	PR/MC	TOOLING AND IND FAC	86	5
87	PR/CM	DATA	87	5
88	PR/CM	INITIAL TRAINING	88	5
89	PROC	OTHER	89	5
90		RECURRING	90	3
91		CONTRACTOR	91	4
92	PROC	MISSION HARDWARE PROD	92	5
93	PR/OM	INITIAL SPARES	93	5
94	PROC	SUSTAINING ENGINEERING	94	5
95	PROC	ECP/ECO	95	5
96	PR/CM	1ST DEST TRANS/PKG	96	5
97	PROC	SUST TOOL, TEST EQUIP	97	5
98	PROC	RIP-OUT,INSTALL,INTEG	98	5
99	PROC	OTHER	99	5
100		GOVERNMENT	100	4
101	PROC	MISSION HARDWARE PROD	101	5
102	PR/OM	INITIAL SPARES	102	5
103	PROC	SUSTAINING ENGINEERING	103	5
104	PROC	ECP/ECO	104	5
105	PR/OM	1ST DEST TRANS/PKG	105	5
106	PROC	SUST TOOL, TEST EQUIP	106	5
107	PROC	RIP-OUT,INSTALL,INTEG	107	5
108	PROC	OTHER	108	5

APPRO	CODE	COST ELEMENT		ROLLUP
109		OPERATIONS AND SUPPORT PHASE	109	1
110		OPERATIONS	110	2
111		CONTRACTOR	111	3
112	OMN	CONSUMABLES	112	4
113	OMN	OTHER	113	4
114		GOVERNMENT	114	3
115	OM/MP	ORGANIZATIONAL PERSONNEL	115	4
116	OMN	EQUIPMENT LEASEHOLD	116	4
117	OM/MC	OPERATIONAL FACILITIES	117	4
118	OMN	CONSUMABLES	118	4
119	OMN	OTHER	119	4
120		LOGISTIC SUPPORT	120	2
121		CONTRACTOR	121	3
122	OMN	SYSTEM ILS MANAGEMENT	122	4
123	OMN	SYS ENG, FIELD SERVICE	123	4
124		SUPPLY	124	4
125	PR/OM	SPARE PARTS,REPAIR MAT	125	5
126	OMN	TRANS AND PACKAGING	126	5
127	OMN	DATA AND DOCUMENTATION	127	4
128	OMN	OTHER ILS	128	4
129		GOVERNMENT	129	3
130	OMN	SYSTEM ILS MANAGEMENT	130	4
131		MAINTENANCE	131	4
132	OM/MC	MAINTENANCE FACILITIES	132	5
133	OM/MP	MAINTENANCE PERSONNEL	133	5
134	OMN	SUPPORT EQUIP MAINT	134	5
135	OMN	SYS ENG, FIELD SERVICE	135	4
136		SUPPLY	136	4
137	OM/MP	SUPPLY PERSONNEL	137	5
138	OM/MC	SUPPLY FACILITIES	138	5
139	PR/OM	SPARE PARTS,REPAIR MAT	139	5
140	OMN	INVENTORY ADMIN	140	5
141	OMN	TRANS AND PACKAGING	141	5
142	OMN	DATA AND DOCUMENTATION	142	4
143	OMN	OTHER ILS	143	4
144	OMN	CONTRACTOR - TRAINING	144	2
145	OMN	GOVERNMENT - TRAINING	145	2
146	OMN	CONTRACTOR - OTHER	146	2
147	OMN	GOVERNMENT - OTHER	147	2
148		TOTAL	148	1

FIRST RADAR IS OPERATED ON SHIP CLASSES HOC FFX DD-963 ACE ZIPGUN BOMBER

THROUGHPUT

INDEX	1	2	3	4	5	6	7	8	9	10
1- 10				5.	20.		10.	3.4	1.5	.75
11- 20		4.	20.		11.	1.	1.	1.		
21- 30	3.8	15.5			3.65	1.35	2.6		1.2	7.
31- 40			3.	1.	1.5					10.
41- 50	10.		2.	10.	2.	1.	5.			.1
51- 60	1.	3.	1.	4.	2.				1.	
61- 70	3.2	.1			1.	.1	.8	.1		
71- 80		5.6	12.3	2.5	1.	1.		4.2	3.3	4.
81- 90		2.4	.86	1.	1.		1.5	1.2	2.	
91- 100				1.	2.	2.4	1.6	5.2	1.	
101- 110			1.	2.	1.05	.7	20.8	1.		
111- 120			5.			10.	3.		10.	
121- 130		1.5	1.3		10.	1.	1.4	1.		4.
131- 140		7.2	6.	1.	3.2		3.	3.6	10.	2.3
141- 150	1.	1.5	1.		4.6	1.5	1.5			

CER INPUT

F C	CBS ROW	CER NO.	CBS XREF	PARAMETER # 1 (F = FACTOR)	PARAMETER # 2 (F = FACTOR)	PARAMETER # 3 (F = FACTOR)	PARAMETER # 4 (F = FACTOR)	PARAMETER # 5 (F = FACTOR)	PARAMETER # 6 (F = FACTOR)
C	6 0	18	0 0	5.000000E-02	11.2000	1.00000	5.00000	0.	0.
C	14 0	18	0 0	5.000000E-02	11.2000	1.00000	12.0000	0.	0.
C	23 0	18	0 0	2.500000E-02	10.0000	1.00000	40.0000	0.	0.
C	24 0	12	0 0	5.000000E-02	40.0000	1.00000	1.00000	0.	0.
C	31 0	18	0 0	2.500000E-02	10.0000	1.00000	20.0000	0.	0.
C	32 0	12	0 0	5.000000E-02	20.0000	1.00000	1.00000	0.	0.
C	40 0	12	0 0	100.000	5.000000E-02	1.00000	1.00000	0.	0.
C	42 0	12	0 0	1.50000	2.00000	10.0000	1.00000	0.	0.
C	49 0	12	0 0	50.0000	5.000000E-02	1.00000	1.00000	0.	0.
C	58 0	1	0 0	1.40000	.848000	0.	0.	0.	0.
C	64 0	1	0 0	.600000	.848000	0.	0.	0.	0.
C	77 0	10	0 0	9.800000E-03	.934000	1.14000	2.10000	.440000	0.
C	86 0	10	0 0	4.200000E-03	.934000	1.14000	2.10000	.440000	0.
C	92 0	4	0 0	1.40000	150.000	.848000	0.	0.	0.
C	93 0	8	92 0	5.000000E-02	0.	0.	0.	0.	0.
C	101 0	4	0 0	.600000	150.000	.848000	0.	0.	0.
C	102 0	8	101 0	5.000000E-02	0.	0.	0.	0.	0.
C	112 0	8	92 0	.120000	0.	0.	0.	0.	0.
C	115 0	12	0 0	10.0000	1.00000	3.000000E-02	150.000	0.	0.
C	118 0	8	101 0	.120000	0.	0.	0.	0.	0.

SECOND RADAR IS OPERATED ON SHIP CLASSES HOC FFX DD-963 ACE ZIPGUN

THROUGHPUT

INDEX	1	2	3	4	5	6	7	8	9	10
1- 10				.8	16.		8.	2.72	1.2	.6
11- 20		3.2	16.		8.8	.8	.8	.8		
21- 30	3.04	12.4			2.92	1.08	2.08		.96	5.6
31- 40			2.4	.8	1.2					8.
41- 50	8.		1.6	8.	1.6	.8	4.		.8	.08
51- 60	.8	2.4	.8	3.2	1.6					
61- 70	2.56	.08			.8	.08	.64	.08		
71- 80		4.48	9.84	2.	.8	.8		3.36	2.64	3.2
81- 90		1.92	.69	.8	.8		1.2	.96	1.6	
91- 100				.8	1.6	1.92	1.28	4.16	.8	
101- 110			.8	1.6	.84	.56	16.64	.8		
111- 120			4.			8.	2.4		.8	
121- 130		1.2	1.04		8.	.4	1.12	.8		3.2
131- 140		5.76	4.8	.8	2.56		2.4	2.88	8.	1.84
141- 150	.8	1.2	.8		3.68	1.2	1.2			

CER INPUT

F C	CBS ROW	CER NO.	CBS XREF	PARAMETER # 1 (F = FACTOR)	PARAMETER # 2 (F = FACTOR)	PARAMETER # 3 (F = FACTOR)	PARAMETER # 4 (F = FACTOR)	PARAMETER # 5 (F = FACTOR)	PARAMETER # 6 (F = FACTOR)
C	6 0	18	0 0	5.000000E-02	0.	0.	0.	0.	0.
C	14 0	18	0 0	5.000000E-02	11.2000	.800000	12.0000	0.	0.
C	23 0	18	0 0	2.500000E-02	10.0000	.800000	40.0000	0.	0.
C	24 0	12	0 0	4.000000E-02	40.0000	1.00000	1.00000	0.	0.
C	31 0	18	0 0	2.500000E-02	10.0000	.800000	20.0000	0.	0.
C	32 0	12	0 0	4.000000E-02	20.0000	1.00000	1.00000	0.	0.
C	40 0	12	0 0	80.0000	5.000000E-02	1.00000	1.00000	0.	0.
C	42 0	12	0 0	1.50000	1.60000	10.0000	1.00000	0.	0.
C	49 0	12	0 0	40.0000	5.000000E-02	1.00000	1.00000	0.	0.
C	58 0	1	0 0	1.12000	.848000	0.	0.	0.	0.
C	64 0	1	0 0	.480000	.848000	0.	0.	0.	0.
C	77 0	10	0 0	9.800000E-03	.747000	1.14000	2.10000	.440000	0.
C	86 0	10	0 0	4.200000E-03	.747000	1.14000	2.10000	.440000	0.
C	92 0	4	0 0	1.12000	150.000	.848000	0.	0.	0.
C	93 0	8	92 0	5.000000E-02	0.	0.	0.	0.	0.
C	101 0	4	0 0	.480000	150.000	.848000	0.	0.	0.
C	102 0	8	101 0	5.000000E-02	0.	0.	0.	0.	0.
C	112 0	8	92 0	.120000	0.	0.	0.	0.	0.
C	115 0	12	0 0	10.0000	1.00000	3.000000E-02	150.000	0.	0.
C	116 0	8	101 0	.120000	0.	0.	0.	0.	0.

MISSILE IS OPERATED ON SHIP CLASSES HOC FFX DD-963 ACE BOOMER

THROUGHPUT

INDEX	1	2	3	4	5	6	7	8	9	10
1- 10				1.	4.		2.	.68	.3	1.5
11- 20		.8	4.		2.2	.2	.2	.2		
21- 30	.76	3.1			.73	.27	.56		.24	1.4
31- 40			.6	.2	.3					
41- 50	2.		.4	2.	.4	.2	1.			2.
51- 60	.2	.6	.2	.8	.4				.2	.02
61- 70	.64	.02			.2	.02	.16	.02		
71- 80		1.12	2.46	.5	.2	.2		.84	.66	.8
81- 90		.48	.17	.2	.2		.3	.24	.4	
91- 100				.2	.4	11.	7.3	1.04	.2	
101- 110			.2	.4	4.7	3.1	4.16	.2		
111- 120			1.			2.	1.5		2.	
121- 130		.3	.26		2.	.2	.28	.2		.8
131- 140		1.44	1.2	.2	.64		.6	.72	2.	.46
141- 150	.2	.3	.2		.92	.3	.3			

CER INPUT

F C	CBS ROW	CER NO.	CBS XREF	PARAMETER # 1 (F = FACTOR)	PARAMETER # 2 (F = FACTOR)	PARAMETER # 3 (F = FACTOR)	PARAMETER # 4 (F = FACTOR)	PARAMETER # 5 (F = FACTOR)	PARAMETER # 6 (F = FACTOR)
F	1 0	10	0 0	7.300000E-05	9.79000	.970000	76.0100	1.00000	0.
F	2 0	3	0 0	F 1.00000	1.00000	.766000	503.000	-.234000	0.
F	3 0	10	0 0	6.600000E-02	30300.0	.610010	1.00000	1.00000	0.
F	4 0	3	0 0	F 3.00000	1.00000	.848000	1000.00	-.152000	0.
F	5 0	10	0 0	F 2.00000	1000.00	-.234000	1.00000	1.00000	0.
C	6 0	18	0 0	5.000000E-02	11.2000	.500000	5.00000	0.	0.
C	14 0	18	0 0	5.000000E-02	11.2000	.500000	12.0000	0.	0.
C	23 1	18	0 0	9.000000E-02	9.90000	F 5.00000	10.0000	0.	0.
C	23 2	18	0 0	4.000000E-02	5.20000	F 3.00000	10.0000	0.	0.
C	24 0	12	0 0	2.500000E-02	40.0000	1.00000	1.00000	0.	0.
C	31 0	18	0 0	2.500000E-02	10.0000	.500000	20.0000	0.	0.
C	32 0	12	0 0	2.500000E-02	20.0000	1.00000	1.00000	0.	0.
C	40 0	12	0 0	50.0000	5.000000E-02	1.00000	1.00000	0.	0.
C	42 0	12	0 0	1.50000	1.10000	10.0000	1.00000	0.	0.
C	49 0	12	0 0	25.0000	5.000000E-02	1.00000	1.00000	0.	0.
C	58 0	1	0 0	.700000	.848000	0.	0.	0.	0.
C	64 0	1	0 0	.300000	.848000	0.	0.	0.	0.
C	77 0	10	0 0	9.800000E-03	.467000	1.14000	2.10000	.440000	0.
C	86 0	10	0 0	4.200000E-03	.467000	1.14000	2.10000	.440000	0.
C	92 1	4	0 0	F 2.00000	150.000	.766000	0.	0.	0.
C	92 2	4	0 0	F 4.00000	300.000	.848000	0.	0.	0.
C	93 0	15	0 0	91.0000	F 5.00000	F 3.00000	0.	0.	0.
C	101 0	4	0 0	.300000	150.000	.848000	0.	0.	0.
C	102 0	8	101 0	5.000000E-02	0.	0.	0.	0.	0.
C	112 0	8	92 0	.120000	0.	0.	0.	0.	0.
C	115 0	12	0 0	10.0000	2.00000	3.000000E-02	150.000	0.	0.
C	118 0	8	101 0	.120000	0.	0.	0.	0.	0.
C	139 1	8	92 1	.250000	0.	0.	0.	0.	0.
C	139 2	8	92 2	.500000	0.	0.	0.	0.	0.

SLCCM
TESTCASE DATA

08/01/79
80.07.10.

SHIP INSTALLATION SCHEDULE - BASED ON 10 SHIP FLEET

	1985	1986	1987	1988	1989	1990	TOTAL
HOC	1	0	0	0	0	0	1
FFX	0	2	0	0	0	0	2
DD-963	0	0	1	0	0	0	1
AOE	0	0	0	2	0	0	2
ZIPGUN	0	0	0	0	2	0	2
BOOMER	0	0	0	0	0	2	2

EQUIPMENT ELEMENTS PER SHIP

SHIP CLASS	EQUIPMENT ELEMENT	OPERATIONAL QUANTITY	INVESTMENT QUANTITY
HOC	FIRST	1	1.00
	SECOND	2	1.00
	MISSIL	20	20.00
FFX	FIRST	1	1.00
	SECOND	2	0.00
	MISSIL	20	20.00
DD-963	FIRST	1	1.00
	SECOND	2	1.00
	MISSIL	20	0.00
AOE	FIRST	1	1.00
	SECOND	1	1.00
	MISSIL	20	10.00
ZIPGUN	FIRST	1	1.00
	SECOND	5	2.00
BOMBR	FIRST	1	1.00
	MISSIL	40	10.00

SLCCM
TESTCASE DATA

08/01/79
08.07.18.

LISTING OF THE 11 COST ELEMENTS INCLUDED IN FLYAWAY COSTS

72 73 74 77 80 92 94 95 96 97 99

SLCCM
TESTCASE DATA

EVALUATION OF CERS AND FACTORS FOR FIRST RADAR

08/01/79
00.07.10.

ROW CER	TEMP	P 1	P 2	P 3	P 4	P 5	P 6	SUBEL1	SUBEL2	SUBEL3	SUBEL4	SUBEL5	SUBEL6	SUBEL7	SUBEL8	FACTOR
C 6018	56.250	5.00E-02	11.	1.0	5.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56.3	0.0
C 14018	135.000	5.00E-02	11.	1.0	12.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	135.0	0.0
C 23018	401.000	2.50E-02	10.	1.0	40.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	401.0	0.0
C 24012	2.000	5.00E-02	40.	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
C 31018	200.500	2.50E-02	10.	1.0	20.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.5	0.0
C 32012	1.000	5.00E-02	20.	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
C 40012	5.000	100	5.00E-02	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
C 42012	30.000	1.5	2.0	10.	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0
C 49012	2.500	50.	5.00E-02	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0
C 580 1	9.866	1.4	.85	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0
C 640 1	4.226	.60	.85	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0
C 77010	.013	9.80E-03	.93	1.1	2.1	.44	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0
C 86010	.005	4.20E-03	.93	1.1	2.1	.44	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0
C 920 4	5.516	1.4	1.50E+02	.85	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0
C 930 8	.276	5.00E-02	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.3	0.0
C1010 4	2.364	.60	1.50E+02	.85	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0
C1020 8	.118	5.00E-02	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.1	0.0
C1120 8	.662	.12	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.7	0.0
C115012	45.000	10.	1.0	3.00E-02	1.50E+02	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	0.0
C1180 8	.284	.12	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.3	0.0

SLCCM
TESTCASE DATA

EVALUATION OF CERS AND FACTORS FOR SECOND RADAR

08/01/79
08.07.16.

ROW CER	TEMP	P 1	P 2	P 3	P 4	P 5	P 6	SUBEL1	SUBEL2	SUBEL3	SUBEL4	SUBEL5	SUBEL6	SUBEL7	SUBEL8	FACTOR
C 6018	0.000	5.00E-02	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C 14018	108.120	5.00E-02	11.	.80	12.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	108.1	0.0
C 23018	321.000	2.50E-02	10.	.80	40.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	321.0	0.0
C 24012	1.600	4.00E-02	40.	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0
C 31018	160.500	2.50E-02	10.	.80	20.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	160.5	0.0
C 32012	.800	4.00E-02	20.	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.8	0.0
C 40012	4.000	80.	5.00E-02	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0
C 42012	24.000	1.5	1.6	10.	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.0	0.0
C 49012	2.000	40.	5.00E-02	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
C 580 1	7.893	1.1	.85	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	0.0
C 640 1	3.383	.48	.85	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0
C 77010	.010	9.80E-03	.75	1.1	2.1	.44	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0
C 86010	.004	4.20E-03	.75	1.1	2.1	.44	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0
C 920 4	4.413	1.1	1.50E+02	.85	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
C 930 8	.221	5.00E-02	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0
C1010 4	1.891	.48	1.50E+02	.85	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0
C1020 8	.095	5.00E-02	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.1	0.0
C1120 8	.530	.12	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.5	0.0
C115012	45.000	10.	1.0	3.00E-02	1.50E+02	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	0.0
C1180 8	.227	.12	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0

SLCCM
TESTCASE DATA

EVALUATION OF CERS AND FACTORS FOR MISSILE

08/01/79
00.07.18.

ROW	CER	TEMP	P 1	P 2	P 3	P 4	P 5	P 6	SUBEL1	SUBEL2	SUBEL3	SUBEL4	SUBEL5	SUBEL6	SUBEL7	SUBEL8	FACTOR
F	1018	.047	7.30E-05	9.8	.97	70.	1.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0
F	20 3	.280	4.67E-02	1.8	.77	5.00E+02	-.23	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2
F	3018	35.529	6.60E-02	3.00E+04	.61	1.0	1.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.5
F	40 3	101.528	36.	1.8	.85	1.00E+03	-.15	0.	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	101.5
F	5018	.040	.20	1.00E+03	-.23	1.0	1.0	0.	0.0	0.0	0.0	0.0	0.0	0.0	4.0	4.0	.0
C	6018	28.250	5.00E-02	11.	.50	5.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.3	0.0
C	14018	67.800	5.00E-02	11.	.50	12.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	67.8	0.0
C	23118	4.833	9.00E-02	9.9	3.97E-02	10.	0.	0.	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0
C	23218	1847.929	4.00E-02	5.2	36.	10.	0.	0.	4.8	1847.9	0.0	0.0	0.0	0.0	0.0	1852.8	0.0
C	24012	1.000	2.50E-02	40.	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
C	31018	100.500	2.50E-02	10.	.50	20.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.5	0.0
C	32012	.500	2.50E-02	20.	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.5	0.0
C	40012	2.500	50.	5.00E-02	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0
C	42012	15.000	1.5	1.0	10.	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0
C	49012	1.256	25.	5.00E-02	1.0	1.0	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
C	580 1	34.761	.70	.85	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.8	0.0
C	640 1	14.898	.30	.85	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.9	0.0
C	77018	.006	9.80E-03	.47	1.1	2.1	.44	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0
C	86018	.002	4.20E-03	.47	1.1	2.1	.44	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0
C	921 4	4.448	.20	1.50E+02	.77	0.	0.	0.	4.4	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0
C	922 4	3536.273	1.02E+02	3.00E+02	.85	0.	0.	0.	4.4	3536.3	0.0	0.0	0.0	0.0	0.0	3540.7	0.0
C	93015	3236.790	91.	3.97E-02	36.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3236.8	0.0
C	1010 4	11.391	.30	1.50E+02	.85	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.4	0.0
C	1020 8	.570	5.00E-02	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.6	0.0
C	1120 8	424.887	.12	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	424.9	0.0
C	115012	90.000	10.	2.0	3.00E-02	1.50E+02	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	90.0	0.0
C	1180 8	1.367	.12	0.	0.	0.	0.	0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0
C	1391 8	1.112	.25	0.	0.	0.	0.	0.	1.1	0.0	0.0	0.0	0.0	0.0	2.0	3.1	0.0
C	1392 8	1768.137	.50	0.	0.	0.	0.	0.	1.1	1768.1	0.0	0.0	0.0	0.0	2.0	1771.2	0.0

SLCCM
TESTCASE DATA

EQUIPMENT ELEMENT QUANTITES - 10 SHIP FLEET SUMMARY

06/01/79
00.07.10.

EQUIPMENT ELEMENT		OPERATIONAL QUANTITY	INVESTMENT QUANTITY
FIRST	RADAR	10	10.00
SECOND	RADAR	20	10.00
	MISSILE	200	100.00

EQUIPMENT ELEMENT LIFE CYCLE COSTS
10 SHIP FLEET SUMMARY
R D T & E PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	1	RDT&E PHASE	915.00	684.22	2076.05	3675.27
	2	VALIDATION	269.90	167.84	113.13	550.87
	3	CONTRACTOR	96.90	29.32	37.73	163.95
RD/OM	4	SYSTEM/PROGRAM MGT	5.00	.80	1.00	6.80
RDTE	5	SYSTEMS ENGINEERING	20.00	16.00	4.00	40.00
RDTE	6	TEST HARDWARE FAB	56.25	1.00	28.25	84.50
RDTE	7	DEVELOPMENT T&E	10.00	8.00	2.00	20.00
RD/MC	8	INDUSTRIAL FACILITIES	3.40	2.72	.68	6.80
RDTE	9	DATA	1.50	1.20	.30	3.00
RDTE	10	OTHER	.75	.60	1.50	2.85
	11	GOVERNMENT	173.00	138.52	75.40	386.92
RD/OM	12	SYSTEM/PROGRAM MGT	4.00	3.20	.80	8.00
RDTE	13	SYSTEMS ENGINEERING	20.00	16.00	4.00	40.00
RDTE	14	TEST HARDWARE FAB	135.00	108.12	67.80	310.92
RDTE	15	DEVELOPMENT T&E	11.00	8.80	2.20	22.00
RD/MC	16	INDUSTRIAL FACILITIES	1.00	.80	.20	2.00
RDTE	17	DATA	1.00	.80	.20	2.00
RDTE	18	OTHER	1.00	.80	.20	2.00
	19	FULL SCALE DEVELOPMENT	645.10	516.38	1962.92	3124.40
	20	CONTRACTOR	429.90	344.12	1859.18	2633.20
RD/OM	21	SYS/PROG/LOG SUPT MGT	3.80	3.04	.76	7.60
RDTE	22	SYSTEMS ENGINEERING	15.50	12.40	3.10	31.00
RDTE	23	TEST HARDWARE FAB	401.00	321.00	1852.76	2574.76
RDTE	24	PROTOTYPE TESTS	2.00	1.60	1.00	4.60
RD/MC	25	TOOLING AND IND FAC	3.65	2.92	.73	7.30
RDTE	26	DATA	1.35	1.08	.27	2.70
RDTE	27	OTHER	2.60	2.08	.56	5.24
	28	GOVERNMENT	215.20	172.26	103.74	491.20
RD/OM	29	SYS/PROG/LOG SUPT MGT	1.20	.96	.24	2.40
RDTE	30	SYSTEMS ENGINEERING	7.00	5.60	1.40	14.00
RDTE	31	TEST HARDWARE FAB	200.50	160.50	100.50	461.50
RDTE	32	PROTOTYPE TESTS	1.50	.80	.50	2.30
RD/MC	33	TOOLING AND IND FAC	3.00	2.40	.60	6.00
RDTE	34	DATA	1.00	.80	.20	2.00
RDTE	35	OTHER	1.50	1.20	.30	3.00

EQUIPMENT ELEMENT LIFE CYCLE COSTS
10 SHIP FLEET SUMMARY
PILOT PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	36	INVESTMENT PHASE	200.90	160.72	6911.04	7272.65
	37	PILOT/LIMITED PRODUCTION	168.39	87.20	79.89	276.08
	38	NONRECURRING	88.50	71.80	28.95	188.25
	39	CONTRACTOR	65.00	52.00	23.50	140.50
PR/CM	40	SYSTEM/PROGRAM MGT	5.00	4.00	2.50	11.50
PROC	41	ADV PRODUCTION ENG	10.00	8.00	2.00	20.00
PR/CM	42	SYSTEM T&E	30.00	24.00	15.00	69.00
PROC	43	LOGISTIC SUPPORT	2.00	1.60	.40	4.00
PR/MC	44	TOOLING AND IND FAC	10.00	8.00	2.00	20.00
PR/OM	45	DATA	2.00	1.60	.40	4.00
PR/OM	46	INITIAL TRAINING	1.00	.80	.20	2.00
PROC	47	OTHER	5.00	4.00	1.00	10.00
	48	GOVERNMENT	23.50	18.80	5.45	47.75
PR/OM	49	SYSTEM/PROGRAM MGT	2.50	2.00	1.25	5.75
PR/CM	50	SYSTEM T&E	10.00	8.00	2.00	20.00
PROC	51	LOGISTIC SUPPORT	1.00	.80	.20	2.00
PR/MC	52	TOOLING AND IND FAC	3.00	2.40	.60	6.00
PR/CM	53	DATA	1.00	.80	.20	2.00
PR/CM	54	INITIAL TRAINING	4.00	3.20	.80	8.00
PROC	55	OTHER	2.00	1.60	.40	4.00
	56	RECURRING	20.49	16.40	51.94	87.83
	57	CONTRACTOR	14.27	11.41	35.64	61.32
PROC	58	MISSION HARDWARE PROD	9.87	7.89	34.76	52.52
PROC	59	ECP/ECO	1.00	.80	.20	2.00
PR/OM	60	1ST DEST TRANS/PKG	.10	.08	.02	.20
PROC	61	RIP-OUT,INSTALL,INTEG	3.20	2.56	.64	6.40
PROC	62	OTHER	.10	.08	.02	.20
	63	GOVERNMENT	6.23	4.98	15.30	26.51
PROC	64	MISSION HARDWARE PROD	4.23	3.38	14.90	22.51
PROC	65	ECP/ECO	1.00	.80	.20	2.00
PR/CM	66	1ST DEST TRANS/PKG	.10	.08	.02	.20
PROC	67	RIP-OUT,INSTALL,INTEG	.50	.64	.16	1.60
PROC	68	OTHER	.10	.08	.02	.20
		UNIT FLYAWAY COST	3.79	3.03	35.65	42.47

EQUIPMENT ELEMENT LIFE CYCLE COSTS
10 SHIP FLEET SUMMARY
FULL PRODUCTION PHASE
(FY79 $M)

APPRO	POM	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	69	FULL PRODUCTION	91.90	73.52	6831.15	6996.57
	70	NONRECURRING	43.86	35.10	8.78	87.76
	71	CONTRACTOR	33.91	27.13	6.79	67.83
PR/OM	72	SYSTEM/PROGRAM MGT	5.60	4.48	1.12	11.20
PROC	73	PRODUCTION ENGINEERING	12.30	9.84	2.46	24.60
PR/OM	74	SYSTEM T&E	2.50	2.00	.50	5.00
PROC	75	LOGISTICS SUPPORT	1.00	.80	.20	2.00
PR/MC	76	OPERATIONAL SITE ACT	1.00	.80	.20	2.00
PR/MC	77	TOOLING AND IND FAC	.01	.01	.01	.03
PR/OM	78	DATA	4.20	3.36	.84	8.40
PR/OM	79	INITIAL TRAINING	3.30	2.64	.66	6.60
PROC	80	OTHER	4.00	3.20	.80	8.00
	81	GOVERNMENT	9.97	7.97	1.99	19.93
PR/OM	82	SYSTEM/PROGRAM MGT	2.40	1.92	.48	4.80
PR/OM	83	SYSTEM T&E	.86	.69	.17	1.72
PROC	84	LOGISTICS SUPPORT	1.00	.80	.20	2.00
PR/MC	85	OPERATIONAL SITE ACT	1.00	.80	.20	2.00
PR/MC	86	TOOLING AND IND FAC	.01	.00	.00	.01
PR/OM	87	DATA	1.50	1.20	.30	3.00
PR/OM	88	INITIAL TRAINING	1.20	.96	.24	2.40
PROC	89	OTHER	2.00	1.60	.40	4.00
	90	RECURRING	48.02	38.42	6822.37	6908.81
	91	CONTRACTOR	18.99	15.19	6797.65	6831.84
PROC	92	MISSION HARDWARE PROD	5.52	4.41	3540.72	3550.65
PR/OM	93	INITIAL SPARES	.28	.22	3236.79	3237.29
PROC	94	SUSTAINING ENGINEERING	1.00	.80	.20	2.00
PROC	95	ECP/ECO	2.00	1.60	.40	4.00
PR/OM	96	1ST DEST TRANS/PKG	2.40	1.92	11.00	15.32
PROC	97	SUST TOOL, TEST EQUIP	1.60	1.28	7.30	10.18
PROC	98	RIP-OUT,INSTALL,INTEG	5.20	4.16	1.04	10.40
PROC	99	OTHER	1.00	.80	.20	2.00
	100	GOVERNMENT	29.03	23.23	24.72	76.98
PROC	101	MISSION HARDWARE PROC	2.36	1.89	11.39	15.65
PR/OM	102	INITIAL SPARES	.12	.09	.57	.78
PROC	103	SUSTAINING ENGINEERING	1.00	.80	.20	2.00
PROC	104	ECP/ECO	2.00	1.60	.40	4.00
PR/OM	105	1ST DEST TRANS/PKG	1.05	.84	4.70	6.59
PROC	106	SUST TOOL, TEST EQUIP	.70	.56	3.10	4.36
PROC	107	RIP-OUT,INSTALL,INTEG	20.80	16.64	4.16	41.60
PROC	108	OTHER	1.00	.80	.20	2.00

EQUIPMENT ELEMENT LIFE CYCLE COSTS
10 SHIP FLEET SUMMARY
OPERATION & SUPPORT PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	109	OPERATIONS AND SUPPORT PHASE	141.55	115.04	2305.52	2562.10
	110	OPERATIONS	73.95	60.96	522.75	657.66
	111	CONTRACTOR	5.66	4.53	425.89	436.08
OMN	112	CONSUMABLES	.66	.53	424.89	426.08
OMN	113	OTHER	5.00	4.00	1.00	10.00
	114	GOVERNMENT	68.28	56.43	96.87	221.58
OM/MP	115	ORGANIZATIONAL PERSONNEL	45.00	45.00	90.00	180.00
OMN	116	EQUIPMENT LEASEHOLD	10.00	8.00	2.00	20.00
OM/MC	117	OPERATIONAL FACILITIES	3.00	2.40	1.50	6.90
OMN	118	CONSUMABLES	.28	.23	1.37	1.88
OMN	119	OTHER	10.10	.80	2.00	12.80
	120	LOGISTIC SUPPORT	60.00	48.00	1781.25	1889.25
	121	CONTRACTOR	16.20	12.96	3.24	32.40
OMN	122	SYSTEM ILS MANAGEMENT	1.50	1.20	.30	3.00
OMN	123	SYS ENG. FIELD SERVICE	1.30	1.04	.26	2.60
	124	SUPPLY	11.00	8.80	2.20	22.00
PR/OM	125	SPARE PARTS,REPAIR MAT	10.00	8.00	2.00	20.00
OMN	126	TRANS AND PACKAGING	1.00	.80	.20	2.00
OMN	127	DATA AND DOCUMENTATION	1.40	1.12	.28	2.80
OMN	128	OTHER ILS	1.00	.80	.20	2.00
	129	GOVERNMENT	43.80	35.04	1778.01	1856.85
OMN	130	SYSTEM ILS MANAGEMENT	4.00	3.20	.80	8.00
	131	MAINTENANCE	14.20	11.36	2.84	28.40
OM/MC	132	MAINTENANCE FACILITIES	7.20	5.76	1.44	14.40
OM/MP	133	MAINTENANCE PERSONNEL	6.00	4.80	1.20	12.00
OMN	134	SUPPORT EQUIP MAINT	1.00	.80	.20	2.00
OMN	135	SYS ENG, FIELD SERVICE	3.20	2.56	.64	6.40
	136	SUPPLY	19.90	15.92	1773.23	1809.05
OM/MP	137	SUPPLY PERSONNEL	3.00	2.40	.60	6.00
OM/MC	138	SUPPLY FACILITIES	3.60	2.88	.72	7.20
PR/OM	139	SPARE PARTS,REPAIR MAT	10.00	8.00	1771.25	1789.25
OMN	140	INVENTORY ADMIN	2.30	1.84	.46	4.60
OMN	141	TRANS AND PACKAGING	1.00	.80	.20	2.00
OMN	142	DATA AND DOCUMENTATION	1.50	1.20	.30	3.00
OMN	143	OTHER ILS	1.00	.80	.20	2.00
OMN	144	CONTRACTOR - TRAINING	0.00	0.00	0.00	0.00
OMN	145	GOVERNMENT - TRAINING	4.60	3.68	.92	9.20
OMN	146	CONTRACTOR - OTHER	1.50	1.20	.30	3.00
OMN	147	GOVERNMENT - OTHER	1.50	1.20	.30	3.00
	148	TOTAL	1257.44	959.97	11292.61	13510.03

FOOTNOTE 1

FOOTNOTE 2

HOC SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
R D T & E PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	1	ROT&E PHASE	91.50	66.42	415.21	575.13
	2	VALIDATION	26.39	16.78	22.63	66.40
	3	CONTRACTOR	9.69	2.93	7.55	20.17
RD/OM	4	SYSTEM/PROGRAM MGT	.50	.08	.20	.78
RDTE	5	SYSTEMS ENGINEERING	2.10	1.60	.80	4.40
RDTE	6	TEST HARDWARE FAB	5.63	0.00	5.65	11.28
RDTE	7	DEVELOPMENT T&E	1.30	.80	.40	2.20
RD/MC	8	INDUSTRIAL FACILITIES	.34	.27	.14	.75
RDTE	9	DATA	.15	.12	.06	.33
RDTE	10	OTHER	.08	.06	.30	.44
	11	GOVERNMENT	17.30	13.85	15.08	46.23
RD/OM	12	SYSTEM/PROGRAM MGT	.40	.32	.16	.88
RDTE	13	SYSTEMS ENGINEERING	2.00	1.60	.80	4.48
RDTE	14	TEST HARDWARE FAB	13.50	10.81	13.56	37.87
RDTE	15	DEVELOPMENT T&E	1.10	.88	.44	2.42
RD/MC	16	INDUSTRIAL FACILITIES	.10	.08	.04	.22
RDTE	17	DATA	.10	.08	.04	.22
RDTE	18	OTHER	.10	.08	.04	.22
	19	FULL SCALE DEVELOPMENT	64.51	51.64	392.58	508.73
	20	CONTRACTOR	42.99	34.41	371.84	449.24
RD/OM	21	SYS/PROG/LOG SUPT MGT	.38	.30	.15	.84
RDTE	22	SYSTEMS ENGINEERING	1.55	1.24	.62	3.41
RDTE	23	TEST HARDWARE FAB	40.10	32.10	370.55	442.75
RDTE	24	PROTOTYPE TESTS	.20	.16	.20	.56
RD/MC	25	TOOLING AND IND FAC	.37	.29	.15	.80
RDTE	26	DATA	.14	.11	.05	.30
RDTE	27	OTHER	.26	.21	.11	.58
	28	GOVERNMENT	21.52	17.23	20.75	59.49
RD/OM	29	SYS/PROG/LOG SUPT MGT	.12	.10	.05	.26
RDTE	30	SYSTEMS ENGINEERING	.70	.56	.28	1.54
RDTE	31	TEST HARDWARE FAB	20.05	16.05	20.10	56.20
RDTE	32	PROTOTYPE TESTS	.10	.08	.10	.28
RD/MC	33	TOOLING AND IND FAC	.30	.24	.12	.66
RDTE	34	DATA	.10	.08	.04	.22
RDTE	35	OTHER	.15	.12	.06	.33

MCC SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
PILOT PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	36	INVESTMENT PHASE	20.79	16.37	1382.21	1418.37
	37	PILOT/LIMITED PRODUCTION	10.90	8.72	15.98	35.60
	38	NONRECURRING	8.85	7.18	5.79	21.72
	39	CONTRACTOR	6.50	5.20	4.70	16.40
PR/OM	40	SYSTEM/PROGRAM MGT	.50	.40	.50	1.40
PROC	41	ADV PRODUCTION ENG	1.00	.80	.40	2.20
PR/OM	42	SYSTEM T&E	3.00	2.40	3.00	8.40
PROC	43	LOGISTIC SUPPORT	.20	.16	.08	.44
PR/MC	44	TOOLING AND IND FAC	1.00	.80	.40	2.20
PR/OM	45	DATA	.20	.16	.08	.44
PR/OM	46	INITIAL TRAINING	.10	.08	.04	.22
PROC	47	OTHER	.50	.40	.20	1.10
	48	GOVERNMENT	2.35	1.88	1.09	5.32
PR/OM	49	SYSTEM/PROGRAM MGT	.25	.20	.25	.70
PR/OM	50	SYSTEM T&E	1.00	.80	.40	2.20
PROC	51	LOGISTIC SUPPORT	.10	.08	.04	.22
PR/MC	52	TOOLING AND IND FAC	.30	.24	.12	.66
PR/OM	53	DATA	.10	.08	.04	.22
PR/OM	54	INITIAL TRAINING	.40	.32	.16	.88
PROC	55	OTHER	.20	.16	.08	.44
	56	RECURRING	2.05	1.64	10.19	13.88
	57	CONTRACTOR	1.43	1.14	7.13	9.70
PROC	58	MISSION HARDWARE PROD	.99	.79	6.95	8.73
PROC	59	ECP/ECO	.10	.08	.04	.22
PR/OM	60	1ST DEST TRANS/PKG	.01	.01	.00	.02
PROC	61	RIP-OUT,INSTALL,INTEG	.32	.26	.13	.70
PROC	62	OTHER	.01	.01	.00	.02
	63	GOVERNMENT	.62	.50	3.06	4.18
PROC	64	MISSION HARDWARE PROD	.42	.34	2.98	3.74
PROC	65	ECP/ECO	.10	.08	.04	.22
PR/OM	66	1ST DEST TRANS/PKG	.01	.01	.00	.02
PROC	67	RIP-OUT,INSTALL,INTEG	.08	.06	.03	.18
PROC	68	OTHER	.01	.01	.00	.02
		SHIP FLYAWAY COST	3.79	3.03	712.94	719.77

HOC SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
FULL PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	69	FULL PRODUCTION	9.19	7.35	1366.23	1382.77
	70	NONRECURRING	4.39	3.51	1.76	9.65
	71	CONTRACTOR	3.39	2.71	1.36	7.46
PR/OM	72	SYSTEM/PROGRAM MGT	.56	.45	.22	1.23
PROC	73	PRODUCTION ENGINEERING	1.23	.98	.49	2.71
PR/OM	74	SYSTEM T&E	.25	.20	.10	.55
PROC	75	LOGISTICS SUPPORT	.10	.08	.04	.22
PR/MC	76	OPERATIONAL SITE ACT	.10	.08	.04	.22
PR/MC	77	TOOLING AND IND FAC	.00	.00	.00	.00
PR/OM	78	DATA	.42	.34	.17	.92
PR/OM	79	INITIAL TRAINING	.33	.26	.13	.73
PROC	80	OTHER	.40	.32	.16	.88
	81	GOVERNMENT	1.00	.80	.40	2.19
PR/OM	82	SYSTEM/PROGRAM MGT	.24	.19	.10	.53
PR/OM	83	SYSTEM T&E	.09	.07	.03	.19
PROC	84	LOGISTICS SUPPORT	.10	.08	.04	.22
PR/MC	85	OPERATIONAL SITE ACT	.10	.08	.04	.22
PR/MC	86	TOOLING AND IND FAC	.00	.00	.00	.00
PR/CM	87	DATA	.15	.12	.06	.33
PR/OM	88	INITIAL TRAINING	.12	.10	.05	.26
PROC	89	OTHER	.20	.16	.08	.44
	90	RECURRING	4.80	3.84	1364.47	1373.12
	91	CONTRACTOR	1.90	1.52	1359.53	1362.95
PROC	92	MISSION HARDWARE PROC	.55	.44	708.14	709.14
PR/OM	93	INITIAL SPARES	.03	.02	647.36	647.41
PROC	94	SUSTAINING ENGINEERING	.10	.08	.04	.22
PROC	95	ECP/ECO	.20	.16	.08	.44
PR/CM	96	1ST DEST TRANS/PKG	.24	.19	2.20	2.63
PROC	97	SUST TOOL, TEST EQUIP	.16	.13	1.46	1.75
PROC	98	RIP-OUT,INSTALL,INTEG	.52	.42	.21	1.14
PROC	99	OTHER	.10	.08	.04	.22
	100	GOVERNMENT	2.90	2.32	4.94	10.17
PROC	101	MISSION HARDWARE PROC	.24	.19	2.28	2.70
PR/OM	102	INITIAL SPARES	.01	.01	.11	.14
PROC	103	SUSTAINING ENGINEERING	.10	.08	.04	.22
PROC	104	ECP/ECO	.20	.16	.08	.44
PR/OM	105	1ST DEST TRANS/PKG	.11	.08	.94	1.13
PROC	106	SUST TOOL, TEST EQUIP	.07	.06	.62	.75
PROC	107	RIP-OUT,INSTALL,INTEG	2.08	1.66	.83	4.58
PROC	108	OTHER	.10	.08	.04	.22

HOC SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
OPERATION & SUPPORT PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	109	OPERATIONS AND SUPPORT PHASE	14.15	11.50	230.55	256.21
	110	OPERATIONS	7.39	6.10	52.28	65.77
	111	CONTRACTOR	.57	.45	42.59	43.61
OMN	112	CONSUMABLES	.07	.05	42.49	42.61
OMN	113	OTHER	.50	.40	.10	1.00
	114	GOVERNMENT	6.83	5.64	9.69	22.16
OM/MP	115	ORGANIZATIONAL PERSONNEL	4.50	4.50	9.00	18.00
OMN	116	EQUIPMENT LEASEHOLD	1.00	.80	.20	2.00
OM/MC	117	OPERATIONAL FACILITIES	.30	.24	.15	.69
OMN	118	CONSUMABLES	.03	.02	.14	.19
OMN	119	OTHER	1.00	.08	.20	1.28
	120	LOGISTIC SUPPORT	6.00	4.80	178.12	188.92
	121	CONTRACTOR	1.62	1.30	.32	3.24
OMN	122	SYSTEM ILS MANAGEMENT	.15	.12	.03	.30
OMN	123	SYS ENG, FIELD SERVICE	.13	.10	.03	.26
	124	SUPPLY	1.10	.88	.22	2.20
PR/OM	125	SPARE PARTS,REPAIR MAT	1.00	.80	.20	2.00
OMN	126	TRANS AND PACKAGING	.10	.08	.02	.20
OMN	127	DATA AND DOCUMENTATION	.14	.11	.03	.28
OMN	128	OTHER ILS	.10	.08	.02	.20
	129	GOVERNMENT	4.38	3.50	177.80	185.68
OMN	130	SYSTEM ILS MANAGEMENT	.40	.32	.08	.80
	131	MAINTENANCE	1.42	1.14	.28	2.84
OM/MC	132	MAINTENANCE FACILITIES	.72	.58	.14	1.44
OM/MP	133	MAINTENANCE PERSONNEL	.60	.48	.12	1.20
OMN	134	SUPPORT EQUIP MAINT	.10	.08	.02	.20
OMN	135	SYS ENG, FIELD SERVICE	.32	.26	.06	.64
	136	SUPPLY	1.99	1.59	177.32	180.90
OM/MP	137	SUPPLY PERSONNEL	.30	.24	.06	.60
OM/MC	138	SUPPLY FACILITIES	.36	.29	.07	.72
PR/OM	139	SPARE PARTS,REPAIR MAT	1.00	.80	177.12	178.92
OMN	140	INVENTORY ADMIN	.23	.18	.05	.46
OMN	141	TRANS AND PACKAGING	.10	.08	.02	.20
OMN	142	DATA AND DOCUMENTATION	.15	.12	.03	.30
OMN	143	OTHER ILS	.10	.08	.02	.20
OMN	144	CONTRACTOR - TRAINING	0.00	0.00	0.00	0.00
OMN	145	GOVERNMENT - TRAINING	.46	.37	.09	.92
OMN	146	CONTRACTOR - OTHER	.15	.12	.03	.30
OMN	147	GOVERNMENT - OTHER	.15	.12	.03	.30
	148	TOTAL	125.74	96.00	2027.97	2249.71

FOOTNOTE 1

FOOTNOTE 2

FFX SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
R D T & E PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	1	RDT&E PHASE	91.50	0.00	415.21	506.71
	2	VALIDATION	26.99	0.00	22.63	49.62
	3	CONTRACTOR	9.69	0.00	7.55	17.24
RD/OM	4	SYSTEM/PROGRAM MGT	.50	0.00	.20	.70
RDTE	5	SYSTEMS ENGINEERING	2.10	0.00	.80	2.88
RDTE	6	TEST HARDWARE FAB	5.63	0.00	5.65	11.28
RDTE	7	DEVELOPMENT T&E	1.00	0.00	.40	1.40
RD/MC	8	INDUSTRIAL FACILITIES	.34	0.00	.14	.48
RDTE	9	DATA	.15	0.00	.06	.21
RDTE	10	OTHER	.08	0.00	.30	.38
	11	GOVERNMENT	17.30	0.00	15.08	32.38
RD/OM	12	SYSTEM/PROGRAM MGT	.40	0.00	.16	.56
RDTE	13	SYSTEMS ENGINEERING	2.00	0.00	.80	2.80
RDTE	14	TEST HARDWARE FAB	13.50	0.00	13.56	27.06
RDTE	15	DEVELOPMENT T&E	1.10	0.00	.44	1.54
RD/MC	16	INDUSTRIAL FACILITIES	.10	0.00	.04	.14
RDTE	17	DATA	.10	0.00	.04	.14
RDTE	18	OTHER	.10	0.00	.04	.14
	19	FULL SCALE DEVELOPMENT	64.51	0.00	392.58	457.09
	20	CONTRACTOR	42.99	0.00	371.84	414.83
RD/OM	21	SYS/PROG/LOG SUPT MGT	.38	0.00	.15	.53
RDTE	22	SYSTEMS ENGINEERING	1.55	0.00	.62	2.17
RDTE	23	TEST HARDWARE FAB	40.10	0.00	370.55	410.65
RDTE	24	PROTOTYPE TESTS	.20	0.00	.20	.40
RD/MC	25	TOOLING AND IND FAC	.37	0.00	.15	.51
RDTE	26	DATA	.14	0.00	.05	.19
RDTE	27	OTHER	.26	0.00	.11	.37
	28	GOVERNMENT	21.52	0.00	20.75	42.27
RD/OM	29	SYS/PROG/LOG SUPT MGT	.12	0.00	.05	.17
RDTE	30	SYSTEMS ENGINEERING	.70	0.00	.28	.98
RDTE	31	TEST HARDWARE FAB	20.05	0.00	20.10	40.15
RDTE	32	PROTOTYPE TESTS	.10	0.00	.10	.20
RD/MC	33	TOOLING AND IND FAC	.30	0.00	.12	.42
RDTE	34	DATA	.10	0.00	.04	.14
RDTE	35	OTHER	.15	0.00	.06	.21

FFX SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
PILOT PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	36	INVESTMENT PHASE	20.19	1.00	1382.21	1402.30
	37	PILOT/LIMITED PRODUCTION	10.90	0.00	15.98	26.88
	38	NONRECURRING	8.85	0.00	5.79	14.64
	39	CONTRACTOR	6.50	0.00	4.70	11.20
PR/CM	40	SYSTEM/PROGRAM MGT	.50	0.00	.50	1.00
PROC	41	ADV PRODUCTION ENG	1.00	0.00	.40	1.40
PR/CM	42	SYSTEM T&E	3.00	0.00	3.00	6.00
PROC	43	LOGISTIC SUPPORT	.20	0.00	.08	.28
PR/PC	44	TOOLING AND IND FAC	1.00	0.00	.46	1.48
PR/OM	45	DATA	.20	0.00	.08	.28
PR/OM	46	INITIAL TRAINING	.10	0.00	.04	.14
PROC	47	OTHER	.50	0.00	.20	.70
	48	GOVERNMENT	2.35	0.00	1.09	3.44
PR/OM	49	SYSTEM/PROGRAM MGT	.25	0.00	.25	.50
PR/OM	50	SYSTEM T&E	1.00	0.00	.40	1.40
PROC	51	LOGISTIC SUPPORT	.10	0.00	.04	.14
PR/MC	52	TOOLING AND IND FAC	.30	0.00	.12	.42
PR/OM	53	DATA	.10	0.00	.04	.14
PR/CM	54	INITIAL TRAINING	.40	0.00	.16	.56
PROC	55	OTHER	.20	0.00	.08	.28
	56	RECURRING	2.05	0.00	10.19	12.24
	57	CONTRACTOR	1.43	0.00	7.13	8.55
PROC	58	MISSION HARDWARE PROD	.99	0.00	6.95	7.94
PROC	59	ECP/ECO	.10	0.00	.04	.14
PR/OM	60	1ST DEST TRANS/PKG	.01	0.00	.00	.01
PROC	61	RIP-OUT,INSTALL,INTEG	.32	0.00	.13	.45
PROC	62	OTHER	.01	0.00	.00	.01
	63	GOVERNMENT	.62	0.00	3.06	3.68
PROC	64	MISSION HARDWARE PROD	.42	0.00	2.98	3.40
PROC	65	ECP/ECO	.10	0.00	.04	.14
PR/CM	66	1ST DEST TRANS/PKG	.01	0.00	.00	.01
PROC	67	RIP-OUT,INSTALL,INTEG	.08	0.00	.03	.11
PROC	68	OTHER	.01	0.00	.00	.01
		SHIP FLYAWAY COST	3.79	0.00	712.94	716.73

FFX SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
FULL PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	69	FULL PRODUCTION	9.19	0.00	1366.23	1375.42
	70	NONRECURRING	4.39	0.00	1.76	6.14
	71	CONTRACTOR	3.39	0.00	1.36	4.75
PR/OM	72	SYSTEM/PROGRAM MGT	.56	0.00	.22	.78
PROC	73	PRODUCTION ENGINEERING	1.23	0.00	.49	1.72
PR/OM	74	SYSTEM T&E	.25	0.00	.10	.35
PROC	75	LOGISTICS SUPPORT	.10	0.00	.04	.14
PR/MC	76	OPERATIONAL SITE ACT	.10	0.00	.04	.14
PR/MC	77	TOOLING AND IND FAC	.00	0.00	.00	.00
PR/OM	78	DATA	.42	0.00	.17	.59
PR/OM	79	INITIAL TRAINING	.33	0.00	.13	.46
PROC	80	OTHER	.40	0.00	.16	.56
	81	GOVERNMENT	1.00	0.00	.40	1.40
PR/OM	82	SYSTEM/PROGRAM MGT	.24	0.00	.10	.34
PR/OM	83	SYSTEM T&E	.09	0.00	.03	.12
PROC	84	LOGISTICS SUPPORT	.10	0.00	.04	.14
PR/MC	85	OPERATIONAL SITE ACT	.10	0.00	.04	.14
PR/MC	86	TOOLING AND IND FAC	.00	0.00	.00	.00
PR/OM	87	DATA	.15	0.00	.06	.21
PR/OM	88	INITIAL TRAINING	.12	0.00	.05	.17
PROC	89	OTHER	.20	0.00	.08	.28
	90	RECURRING	4.80	0.00	1364.47	1369.28
	91	CONTRACTOR	1.90	0.00	1359.53	1361.43
PROC	92	MISSION HARDWARE PROD	.55	0.00	708.14	708.70
PR/OM	93	INITIAL SPARES	.03	0.00	647.36	647.39
PROC	94	SUSTAINING ENGINEERING	.10	0.00	.04	.14
PROC	95	ECP/ECO	.20	0.00	.08	.28
PR/OM	96	1ST DEST TRANS/PKG	.24	0.00	2.20	2.44
PROC	97	SUST TOOL, TEST EQUIP	.16	0.00	1.46	1.62
PROC	98	RIF-OUT,INSTALL,INTEG	.52	0.00	.21	.73
PROC	99	OTHER	.10	0.00	.04	.14
	100	GOVERNMENT	2.90	0.00	4.94	7.85
PROC	101	MISSION HARDWARE PROC	.24	0.00	2.28	2.51
PR/OM	102	INITIAL SPARES	.01	0.00	.11	.13
PROC	103	SUSTAINING ENGINEERING	.10	0.00	.04	.14
PROC	104	ECP/ECO	.20	0.00	.08	.28
PR/OM	105	1ST DEST TRANS/PKG	.11	0.00	.94	1.05
PROC	106	SUST TOOL, TEST EQUIP	.07	0.00	.62	.69
PROC	107	RIF-OUT,INSTALL,INTEG	2.08	0.00	.83	2.91
PROC	108	OTHER	.10	0.00	.04	.14

FFX SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
OPERATION & SUPPORT PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	109	OPERATIONS AND SUPPORT PHASE	14.15	11.50	230.55	256.21
	110	OPERATIONS	7.39	6.10	52.28	65.77
	111	CONTRACTOR	.57	.45	42.59	43.61
OMN	112	CONSUMABLES	.07	.05	42.49	42.61
OMN	113	OTHER	.50	.40	.10	1.00
	114	GOVERNMENT	6.83	5.64	9.69	22.16
OM/MP	115	ORGANIZATIONAL PERSONNEL	4.50	4.50	9.00	18.00
OMN	116	EQUIPMENT LEASEHOLD	1.00	.80	.20	2.00
OM/MC	117	OPERATIONAL FACILITIES	.30	.24	.15	.69
OMN	118	CONSUMABLES	.03	.02	.14	.19
OMN	119	OTHER	1.00	.08	.20	1.28
	120	LOGISTIC SUPPORT	6.76	4.80	178.12	188.92
	121	CONTRACTOR	1.62	1.30	.32	3.24
OMN	122	SYSTEM ILS MANAGEMENT	.15	.12	.03	.30
OMN	123	SYS ENG, FIELD SERVICE	.13	.10	.03	.26
	124	SUPPLY	1.10	.88	.22	2.20
PR/OM	125	SPARE PARTS,REPAIR MAT	1.00	.80	.20	2.00
OMN	126	TRANS AND PACKAGING	.10	.08	.02	.20
OMN	127	DATA AND DOCUMENTATION	.14	.11	.03	.28
OMN	128	OTHER ILS	.10	.08	.02	.20
	129	GOVERNMENT	4.38	3.50	177.80	185.68
OMN	130	SYSTEM ILS MANAGEMENT	.40	.32	.08	.80
	131	MAINTENANCE	1.42	1.14	.28	2.84
OM/MC	132	MAINTENANCE FACILITIES	.72	.58	.14	1.44
OM/MP	133	MAINTENANCE PERSONNEL	.60	.48	.12	1.20
OMN	134	SUPPORT EQUIP MAINT	.10	.08	.02	.20
OMN	135	SYS ENG, FIELD SERVICE	.32	.26	.06	.64
	136	SUPPLY	1.99	1.59	177.32	180.90
OM/MP	137	SUPPLY PERSONNEL	.30	.24	.06	.60
OM/MC	138	SUPPLY FACILITIES	.36	.29	.07	.72
PR/OM	139	SPARE PARTS,REPAIR MAT	1.00	.80	177.12	178.92
OMN	140	INVENTORY ADMIN	.23	.18	.05	.46
OMN	141	TRANS AND PACKAGING	.10	.08	.02	.20
OMN	142	DATA AND DOCUMENTATION	.15	.12	.03	.30
OMN	143	OTHER ILS	.10	.08	.02	.20
OMN	144	CONTRACTOR - TRAINING	0.00	0.00	0.00	0.00
OMN	145	GOVERNMENT - TRAINING	.46	.37	.09	.92
OMN	146	CONTRACTOR - OTHER	.15	.12	.03	.30
OMN	147	GOVERNMENT - OTHER	.15	.12	.03	.30
	148	TOTAL	125.74	11.50	2027.97	2165.22

FOOTNOTE 1

FOOTNOTE 2

DD-963 SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
R D T & E PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	1	RDT&E PHASE	91.50	68.42	0.00	159.92
	2	VALIDATION	26.99	16.78	0.00	43.77
	3	CONTRACTOR	9.69	2.93	0.00	12.62
RD/OM	4	SYSTEM/PROGRAM MGT	.50	.08	0.00	.58
RDTE	5	SYSTEMS ENGINEERING	2.00	1.60	0.00	3.60
RDTE	6	TEST HARDWARE FAB	5.63	0.00	0.00	5.63
RDTE	7	DEVELOPMENT T&E	1.00	.80	0.00	1.80
RD/MC	8	INDUSTRIAL FACILITIES	.34	.27	0.00	.61
RDTE	9	DATA	.15	.12	0.00	.27
RDTE	10	OTHER	.08	.06	0.00	.14
	11	GOVERNMENT	17.30	13.85	0.00	31.15
RD/OM	12	SYSTEM/PROGRAM MGT	.40	.32	0.00	.72
RDTE	13	SYSTEMS ENGINEERING	2.00	1.60	0.00	3.60
RDTE	14	TEST HARDWARE FAB	13.50	10.81	0.00	24.31
RDTE	15	DEVELOPMENT T&E	1.10	.88	0.00	1.98
RD/MC	16	INDUSTRIAL FACILITIES	.10	.08	0.00	.18
RDTE	17	DATA	.10	.08	0.00	.18
RDTE	18	OTHER	.10	.08	0.00	.18
	19	FULL SCALE DEVELOPMENT	64.51	51.64	0.00	116.15
	20	CONTRACTOR	42.99	34.41	0.00	77.40
RD/OM	21	SYS/PROG/LOG SUPT MGT	.38	.30	0.00	.68
RDTE	22	SYSTEMS ENGINEERING	1.55	1.24	0.00	2.79
RDTE	23	TEST HARDWARE FAB	40.10	32.10	0.00	72.20
RDTE	24	PROTOTYPE TESTS	.20	.16	0.00	.36
RD/MC	25	TOOLING AND IND FAC	.37	.29	0.00	.66
RDTE	26	DATA	.14	.11	0.00	.24
RDTE	27	OTHER	.26	.21	0.00	.47
	28	GOVERNMENT	21.52	17.23	0.00	38.75
RD/OM	29	SYS/PROG/LOG SUPT MGT	.12	.10	0.00	.22
RDTE	30	SYSTEMS ENGINEERING	.70	.56	0.00	1.26
RDTE	31	TEST HARDWARE FAB	20.05	16.05	0.00	36.10
RDTE	32	PROTOTYPE TESTS	.10	.08	0.00	.18
RD/MC	33	TOOLING AND IND FAC	.30	.24	0.00	.54
RDTE	34	DATA	.10	.08	0.00	.18
RDTE	35	OTHER	.15	.12	0.00	.27

DD-963 SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
PILOT PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	36	INVESTMENT PHASE	20.19	16.07	0.00	36.16
	37	PILOT/LIMITED PRODUCTION	10.90	8.72	0.00	19.62
	38	NONRECURRING	8.85	7.08	0.00	15.93
	39	CONTRACTOR	6.50	5.20	0.00	11.70
PR/CM	40	SYSTEM/PROGRAM MGT	.50	.40	0.00	.90
PROC	41	ADV PRODUCTION ENG	1.00	.80	0.00	1.80
PR/CM	42	SYSTEM T&E	3.00	2.40	0.00	5.40
PROC	43	LOGISTIC SUPPORT	.20	.16	0.00	.36
PR/MC	44	TOOLING AND IND FAC	1.00	.80	0.00	1.80
PR/CM	45	DATA	.20	.16	0.00	.36
PR/CM	46	INITIAL TRAINING	.10	.08	0.00	.18
PROC	47	OTHER	.50	.40	0.00	.90
	48	GOVERNMENT	2.35	1.88	0.00	4.23
PR/CM	49	SYSTEM/PROGRAM MGT	.25	.20	0.00	.45
PR/CM	50	SYSTEM T&E	1.00	.80	0.00	1.80
PROC	51	LOGISTIC SUPPORT	.10	.08	0.00	.18
PR/MC	52	TOOLING AND IND FAC	.30	.24	0.00	.54
PR/CM	53	DATA	.10	.08	0.00	.18
PR/CM	54	INITIAL TRAINING	.40	.32	0.00	.72
PROC	55	OTHER	.20	.16	0.00	.36
	56	RECURRING	2.05	1.64	0.00	3.69
	57	CONTRACTOR	1.43	1.14	0.00	2.57
PROC	58	MISSION HARDWARE PROD	.99	.79	0.00	1.78
PROC	59	ECP/ECO	.10	.08	0.00	.18
PR/CM	60	1ST DEST TRANS/PKG	.01	.01	0.00	.02
PROC	61	RIF-OUT,INSTALL,INTEG	.32	.26	0.00	.58
PROC	62	OTHER	.01	.01	0.00	.02
	63	GOVERNMENT	.62	.50	0.00	1.12
PROC	64	MISSION HARDWARE PROD	.42	.34	0.00	.76
PROC	65	ECP/ECO	.10	.08	0.00	.18
PR/CM	66	1ST DEST TRANS/PKG	.01	.01	0.00	.02
PROC	67	RIF-OUT,INSTALL,INTEG	.08	.06	0.00	.14
PROC	68	OTHER	.01	.01	0.00	.02
		SHIP FLYAWAY COST	3.79	3.03	0.00	6.83

DD-963 SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
FULL PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	69	FULL PRODUCTION	9.19	7.35	0.00	16.54
	70	NONRECURRING	4.39	3.51	0.00	7.90
	71	CONTRACTOR	3.39	2.71	0.00	6.10
PR/CM	72	SYSTEM/PROGRAM MGT	.56	.45	0.00	1.01
PROC	73	PRODUCTION ENGINEERING	1.23	.98	0.00	2.21
PR/OM	74	SYSTEM T&E	.25	.20	0.00	.45
PROC	75	LOGISTICS SUPPORT	.10	.08	0.00	.18
PR/MC	76	OPERATIONAL SITE ACT	.10	.08	0.00	.18
PR/MC	77	TOOLING AND IND FAC	.00	.00	0.00	.00
PR/OM	78	DATA	.42	.34	0.00	.76
PR/CM	79	INITIAL TRAINING	.33	.26	0.00	.59
PROC	80	OTHER	.40	.32	0.00	.72
	81	GOVERNMENT	1.00	.80	0.00	1.79
PR/OM	82	SYSTEM/PROGRAM MGT	.24	.19	0.00	.43
PR/CM	83	SYSTEM T&E	.09	.07	0.00	.16
PROC	84	LOGISTICS SUPPORT	.10	.08	0.00	.18
PR/MC	85	OPERATIONAL SITE ACT	.10	.08	0.00	.18
PR/MC	86	TOOLING AND IND FAC	.00	.00	0.00	.00
PR/OM	87	DATA	.15	.12	0.00	.27
PR/CM	88	INITIAL TRAINING	.12	.10	0.00	.22
PROC	89	OTHER	.20	.16	0.00	.36
	90	RECURRING	4.80	3.84	0.00	8.64
	91	CONTRACTOR	1.90	1.52	0.00	3.42
PROC	92	MISSION HARDWARE PROD	.55	.44	0.00	.99
PR/OM	93	INITIAL SPARES	.03	.02	0.00	.05
PROC	94	SUSTAINING ENGINEERING	.10	.08	0.00	.18
PROC	95	ECP/ECO	.20	.16	0.00	.36
PR/OM	96	1ST DEST TRANS/PKG	.24	.19	0.00	.43
PROC	97	SUST TOOL, TEST EQUIP	.16	.13	0.00	.29
PROC	98	RIP-OUT,INSTALL,INTEG	.52	.42	0.00	.94
PROC	99	OTHER	.10	.08	0.00	.18
	100	GOVERNMENT	2.90	2.32	0.00	5.23
PROC	101	MISSION HARDWARE PROD	.24	.19	0.00	.43
PR/OM	102	INITIAL SPARES	.01	.01	0.00	.02
PROC	103	SUSTAINING ENGINEERING	.10	.08	0.00	.18
PROC	104	ECP/ECO	.20	.16	0.00	.36
PR/OM	105	1ST DEST TRANS/PKG	.11	.08	0.00	.19
PROC	106	SUST TOOL, TEST EQUIP	.07	.06	0.00	.13
PROC	107	RIP-OUT,INSTALL,INTEG	2.08	1.66	0.00	3.74
PROC	108	OTHER	.10	.08	0.00	.18

DD-963 SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
OPERATION & SUPPORT PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	109	OPERATIONS AND SUPPORT PHASE	14.15	11.50	230.55	256.21
	110	OPERATIONS	7.39	6.10	52.28	65.77
	111	CONTRACTOR	.57	.45	42.59	43.61
OMN	112	CONSUMABLES	.07	.05	42.49	42.61
OMN	113	OTHER	.50	.40	.10	1.00
	114	GOVERNMENT	6.83	5.64	9.69	22.16
OM/MP	115	ORGANIZATIONAL PERSONNEL	4.50	4.50	9.00	18.00
OMN	116	EQUIPMENT LEASEHOLD	1.00	.80	.20	2.00
OM/MC	117	OPERATIONAL FACILITIES	.30	.24	.15	.69
OMN	118	CONSUMABLES	.03	.02	.14	.19
OMN	119	OTHER	1.00	.08	.20	1.28
	120	LOGISTIC SUPPORT	6.80	4.80	178.12	188.92
	121	CONTRACTOR	1.62	1.30	.32	3.24
OMN	122	SYSTEM ILS MANAGEMENT	.15	.12	.03	.30
OMN	123	SYS ENG, FIELD SERVICE	.13	.10	.03	.26
	124	SUPPLY	1.10	.88	.22	2.20
PR/CM	125	SPARE PARTS,REPAIR MAT	1.00	.80	.20	2.00
OMN	126	*TRANS AND PACKAGING*	.10	.08	.02	.20
OMN	127	DATA AND DOCUMENTATION	.14	.11	.03	*.28*
OMN	128	OTHER ILS	.10	.08	.02	.20
	129	GOVERNMENT	4.38	3.50	177.80	185.68
OMN	130	SYSTEM ILS MANAGEMENT	.40	.32	.08	.80
	131	MAINTENANCE	1.42	1.14	.28	2.84
OM/MC	132	MAINTENANCE FACILITIES	.72	.58	.14	1.44
OM/MP	133	MAINTENANCE PERSONNEL	.60	.48	.12	1.20
OMN	134	SUPPORT EQUIP MAINT	.10	.08	.02	.20
OMN	135	SYS ENG, FIELD SERVICE	.32	.26	.06	.64
	136	SUPPLY	1.99	1.59	177.32	180.90
OM/MP	137	SUPPLY PERSONNEL	.30	.24	.06	.60
OM/MC	138	SUPPLY FACILITIES	.36	.29	.07	.72
PR/OM	139	SPARE PARTS,REPAIR MAT	1.00	.80	177.12	178.92
OMN	140	INVENTORY ADMIN	.23	.18	.05	.46
OMN	141	TRANS AND PACKAGING	.10	.08	.02	.20
OMN	142	DATA AND DOCUMENTATION	.15	.12	.03	.30
OMN	143	OTHER ILS	.10	.08	.02	.20
OMN	144	CONTRACTOR - TRAINING	0.00	0.00	0.00	0.00
OMN	145	GOVERNMENT - TRAINING	.46	.37	.09	.92
OMN	146	CONTRACTOR - OTHER	.15	.12	.03	.30
OMN	147	GOVERNMENT - OTHER	.15	.12	.03	.30
	148	TOTAL	125.74	96.00	230.55	452.29

FOOTNOTE 1

FOOTNOTE 2

AOE SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
R D T & E PHASE
(FY79 $M)

APPRO	LN	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	1	RDT&E PHASE	91.50	69.42	207.61	367.53
	2	VALIDATION	26.59	16.78	11.31	55.09
	3	CONTRACTOR	9.69	2.93	3.77	16.40
RD/OM	4	SYSTEM/PROGRAM MGT	.50	.08	.10	.68
RDTE	5	SYSTEMS ENGINEERING	2.00	1.60	.40	4.00
RDTE	6	TEST HARDWARE FAB	5.63	0.00	2.83	8.45
RDTE	7	DEVELOPMENT T&E	1.00	.80	.20	2.00
RD/MC	8	INDUSTRIAL FACILITIES	.34	.27	.07	.68
RDTE	9	DATA	.15	.12	.03	.30
RDTE	10	OTHER	.07	.06	.15	.29
	11	GOVERNMENT	17.30	13.85	7.54	38.69
RD/OM	12	SYSTEM/PROGRAM MGT	.40	.32	.08	.80
RDTE	13	SYSTEMS ENGINEERING	2.00	1.60	.40	4.00
RDTE	14	TEST HARDWARE FAB	13.50	10.81	6.78	31.09
RDTE	15	DEVELOPMENT T&E	1.10	.88	.22	2.20
RD/MC	16	INDUSTRIAL FACILITIES	.10	.08	.02	.20
RDTE	17	DATA	.10	.08	.02	.20
RDTE	18	OTHER	.10	.08	.02	.20
	19	FULL SCALE DEVELOPMENT	64.51	51.64	196.29	312.44
	20	CONTRACTOR	42.99	34.41	185.92	263.32
RD/OM	21	SYS/PROG/LOG SUPT MGT	.38	.30	.08	.76
RDTE	22	SYSTEMS ENGINEERING	1.55	1.24	.31	3.10
RDTE	23	TEST HARDWARE FAB	40.10	32.10	185.28	257.48
RDTE	24	PROTOTYPE TESTS	.20	.16	.10	.46
RD/MC	25	TOOLING AND IND FAC	.37	.29	.07	.73
RDTE	26	DATA	.14	.11	.03	.27
RDTE	27	OTHER	.26	.21	.06	.52
	28	GOVERNMENT	21.52	17.23	10.37	49.12
RD/OM	29	SYS/PROG/LOG SUPT MGT	.12	.10	.02	.24
RDTE	30	SYSTEMS ENGINEERING	.70	.56	.14	1.40
RDTE	31	TEST HARDWARE FAB	20.05	16.05	10.05	46.15
RDTE	32	PROTOTYPE TESTS	.10	.08	.05	.23
RD/MC	33	TOOLING AND IND FAC	.30	.24	.06	.60
RDTE	34	DATA	.10	.08	.02	.20
RDTE	35	OTHER	.15	.12	.03	.30

AOE SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
PILOT PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	36	INVESTMENT PHASE	20.09	16.07	691.10	727.27
	37	PILOT/LIMITED PRODUCTION	10.90	8.72	7.99	27.61
	38	NONRECURRING	8.85	7.08	2.90	18.83
	39	CONTRACTOR	6.50	5.20	2.35	14.05
PR/CM	40	SYSTEM/PROGRAM MGT	.50	.40	.25	1.15
PROC	41	ADV PRODUCTION ENG	1.00	.80	.20	2.00
PR/DM	42	SYSTEM T&E	3.00	2.40	1.50	6.90
PROC	43	LOGISTIC SUPPORT	.20	.16	.04	.40
PR/MC	44	TOOLING AND IND FAC	1.00	.80	.20	2.00
PR/DM	45	DATA	.20	.16	.04	.40
PR/DM	46	INITIAL TRAINING	.10	.08	.02	.20
PROC	47	OTHER	.50	.40	.10	1.00
	48	GOVERNMENT	2.35	1.88	.55	4.78
PR/CM	49	SYSTEM/PROGRAM MGT	.25	.20	.13	.58
PR/DM	50	SYSTEM T&E	1.00	.80	.20	2.00
PROC	51	LOGISTIC SUPPORT	.10	.08	.02	.20
PR/MC	52	TOOLING AND IND FAC	.30	.24	.06	.60
PR/DM	53	DATA	.10	.08	.02	.20
PR/CM	54	INITIAL TRAINING	.40	.32	.08	.80
PROC	55	OTHER	.20	.16	.04	.40
	56	RECURRING	2.05	1.64	5.09	8.78
	57	CONTRACTOR	1.43	1.14	3.56	6.13
PROC	58	MISSION HARDWARE PROD	.99	.79	3.48	5.25
PROC	59	ECP/ECO	.10	.08	.02	.20
PR/CM	60	1ST DEST TRANS/PKG	.01	.01	.00	.02
PROC	61	RIP-OUT,INSTALL,INTEG	.32	.26	.06	.64
PROC	62	OTHER	.01	.01	.00	.02
	63	GOVERNMENT	.62	.50	1.53	2.65
PROC	64	MISSION HARDWARE PROD	.42	.34	1.49	2.25
PROC	65	ECP/ECO	.10	.08	.02	.20
PR/CM	66	1ST DEST TRANS/PKG	.01	.01	.00	.02
PROC	67	RIP-OUT,INSTALL,INTEG	.08	.06	.02	.16
PROC	68	OTHER	.01	.01	.00	.02
		SHIP FLYAWAY COST	3.79	3.03	356.47	363.38

AOE SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
FULL PRODUCTION PHASE
(FY79 $M)

APPRO	RDN	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	69	FULL PRODUCTION	9.19	7.35	683.12	699.66
	70	NONRECURRING	4.39	3.51	.88	8.78
	71	CONTRACTOR	3.39	2.71	.68	6.78
PR/OM	72	SYSTEM/PROGRAM MGT	.56	.45	.11	1.12
PROC	73	PRODUCTION ENGINEERING	1.23	.98	.25	2.46
PR/OM	74	SYSTEM T&E	.25	.20	.05	.50
PROC	75	LOGISTICS SUPPORT	.10	.08	.02	.28
PR/MC	76	OPERATIONAL SITE ACT	.10	.08	.02	.20
PR/MC	77	TOOLING AND IND FAC	.00	.00	.00	.00
PR/CM	78	DATA	.42	.34	.08	.84
PR/OM	79	INITIAL TRAINING	.33	.26	.07	.66
PROC	80	OTHER	.40	.32	.08	.80
	81	GOVERNMENT	1.00	.80	.20	1.99
PR/OM	82	SYSTEM/PROGRAM MGT	.24	.19	.05	.48
PR/OM	83	SYSTEM T&E	.09	.07	.02	.17
PROC	84	LOGISTICS SUPPORT	.10	.08	.02	.20
PR/MC	85	OPERATIONAL SITE ACT	.10	.08	.02	.20
PR/MC	86	TOOLING AND IND FAC	.00	.00	.00	.00
PR/CM	87	DATA	.15	.12	.03	.30
PR/CM	88	INITIAL TRAINING	.12	.10	.02	.24
PROC	89	OTHER	.20	.16	.04	.48
	90	RECURRING	4.80	3.84	682.24	690.88
	91	CONTRACTOR	1.90	1.52	679.77	683.18
PROC	92	MISSION HARDWARE PROD	.55	.44	354.07	355.06
PR/OM	93	INITIAL SPARES	.03	.02	323.68	323.73
PROC	94	SUSTAINING ENGINEERING	.10	.08	.02	.20
PROC	95	ECP/ECO	.20	.16	.04	.40
PR/OM	96	1ST DEST TRANS/PKG	.24	.19	1.10	1.53
PROC	97	SUST TOOL, TEST EQUIP	.16	.13	.73	1.02
PROC	98	RIP-OUT,INSTALL,INTEG	.52	.42	.10	1.04
PROC	99	OTHER	.10	.08	.02	.20
	100	GOVERNMENT	2.90	2.32	2.47	7.70
PROC	101	MISSION HARDWARE PROC	.24	.19	1.14	1.56
PR/OM	102	INITIAL SPARES	.01	.01	.06	.08
PROC	103	SUSTAINING ENGINEERING	.10	.08	.02	.20
PROC	104	ECP/ECO	.20	.16	.04	.40
PR/OM	105	1ST DEST TRANS/PKG	.11	.08	.47	.66
PROC	106	SUST TOOL, TEST EQUIP	.07	.06	.31	.44
PROC	107	RIP-OUT,INSTALL,INTEG	2.08	1.66	.42	4.16
PROC	108	OTHER	.10	.08	.02	.20

AOE SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
OPERATION & SUPPORT PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	MISSILE	TOTAL
	109	OPERATIONS AND SUPPORT PHASE	14.15	5.75	230.55	250.46
	110	OPERATIONS	7.39	3.05	52.28	62.72
	111	CONTRACTOR	.57	.23	42.59	43.38
OMN	112	CONSUMABLES	.07	.03	42.49	42.58
OMN	113	OTHER	.50	.20	.10	.80
	114	GOVERNMENT	6.83	2.82	9.69	19.34
OM/MP	115	ORGANIZATIONAL PERSONNEL	4.50	2.25	9.00	15.75
OMN	116	EQUIPMENT LEASEHOLD	1.00	.40	.20	1.60
OM/MC	117	OPERATIONAL FACILITIES	.30	.12	.15	.57
OMN	118	CONSUMABLES	.03	.01	.14	.18
OMN	119	OTHER	1.00	.04	.20	1.24
	120	LOGISTIC SUPPORT	6.80	2.40	178.12	186.52
	121	CONTRACTOR	1.62	.65	.32	2.59
OMN	122	SYSTEM ILS MANAGEMENT	.15	.06	.03	.24
OMN	123	SYS ENG, FIELD SERVICE	.13	.05	.03	.21
	124	SUPPLY	1.10	.44	.22	1.76
PR/OM	125	SPARE PARTS,REPAIR MAT	1.00	.40	.20	1.60
OMN	126	TRANS AND PACKAGING	.10	.04	.02	.16
OMN	127	DATA AND DOCUMENTATION	.14	.06	.03	.22
OMN	128	OTHER ILS	.10	.04	.02	.16
	129	GOVERNMENT	4.38	1.75	177.80	183.93
OMN	130	SYSTEM ILS MANAGEMENT	.40	.16	.08	.64
	131	MAINTENANCE	1.42	.57	.28	2.27
OM/MC	132	MAINTENANCE FACILITIES	.72	.29	.14	1.15
OM/MP	133	MAINTENANCE PERSONNEL	.60	.24	.12	.96
OMN	134	SUPPORT EQUIP MAINT	.10	.04	.02	.16
OMN	135	SYS ENG, FIELD SERVICE	.32	.13	.06	.51
	136	SUPPLY	1.99	.80	177.32	180.11
OM/MP	137	SUPPLY PERSONNEL	.30	.12	.06	.48
OM/MC	138	SUPPLY FACILITIES	.36	.14	.07	.58
PR/OM	139	SPARE PARTS,REPAIR MAT	1.00	.40	177.12	178.52
OMN	140	INVENTORY ADMIN	.23	.09	.05	.37
OMN	141	TRANS AND PACKAGING	.10	.04	.02	.16
OMN	142	DATA AND DOCUMENTATION	.15	.06	.03	.24
OMN	143	OTHER ILS	.10	.04	.02	.16
OMN	144	CONTRACTOR - TRAINING	0.00	0.00	0.00	0.00
OMN	145	GOVERNMENT - TRAINING	.46	.18	.09	.74
OMN	146	CONTRACTOR - OTHER	.15	.06	.03	.24
OMN	147	GOVERNMENT - OTHER	.15	.06	.03	.24
	148	TOTAL	125.74	90.25	1129.26	1345.25

FOOTNOTE 1

FOOTNOTE 2

ZIPGUN SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
R D T & E PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	TOTAL
	1	RDT&E PHASE	91.50	205.27	296.77
	2	VALIDATION	26.99	50.35	77.34
	3	CONTRACTOR	9.69	8.80	18.49
RD/OM	4	SYSTEM/PROGRAM MGT	.50	.24	.74
RDTE	5	SYSTEMS ENGINEERING	2.00	4.80	6.80
RDTE	6	TEST HARDWARE FAB	5.63	0.00	5.63
RDTE	7	DEVELOPMENT T&E	1.00	2.40	3.40
RD/MC	8	INDUSTRIAL FACILITIES	.34	.82	1.16
RDTE	9	DATA	.15	.36	.51
RDTE	10	OTHER	.08	.18	.26
	11	GOVERNMENT	17.30	41.56	58.86
RD/OM	12	SYSTEM/PROGRAM MGT	.40	.96	1.36
RDTE	13	SYSTEMS ENGINEERING	2.00	4.80	6.80
RDTE	14	TEST HARDWARE FAB	13.50	32.44	45.94
RDTE	15	DEVELOPMENT T&E	1.10	2.64	3.74
RD/MC	16	INDUSTRIAL FACILITIES	.10	.24	.34
RDTE	17	DATA	.10	.24	.34
RDTE	18	OTHER	.10	.24	.34
	19	FULL SCALE DEVELOPMENT	64.51	154.91	219.42
	20	CONTRACTOR	42.99	103.24	146.23
RD/OM	21	SYS/PROG/LOG SUPT MGT	.38	.91	1.29
RDTE	22	SYSTEMS ENGINEERING	1.55	3.72	5.27
RDTE	23	TEST HARDWARE FAB	40.10	96.30	136.40
RDTE	24	PROTOTYPE TESTS	.20	.48	.68
RD/MC	25	TOOLING AND IND FAC	.37	.88	1.24
RDTE	26	DATA	.14	.32	.46
RDTE	27	OTHER	.26	.62	.88
	28	GOVERNMENT	21.52	51.68	73.20
RD/OM	29	SYS/PROG/LOG SUPT MGT	.12	.29	.41
RDTE	30	SYSTEMS ENGINEERING	.70	1.68	2.38
RDTE	31	TEST HARDWARE FAB	20.05	48.15	68.20
RDTE	32	PROTOTYPE TESTS	.10	.24	.34
RD/MC	33	TOOLING AND IND FAC	.30	.72	1.02
RDTE	34	DATA	.10	.24	.34
RDTE	35	OTHER	.15	.36	.51

ZIPGUN SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
PILOT PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	TOTAL
	36	INVESTMENT PHASE	20.09	48.22	68.30
	37	PILOT/LIMITED PRODUCTION	10.90	26.16	37.06
	38	NONRECURRING	8.85	21.24	30.09
	39	CONTRACTOR	6.50	15.60	22.10
PR/CM	40	SYSTEM/PROGRAM MGT	.50	1.20	1.70
PROC	41	ADV PRODUCTION ENG	1.00	2.40	3.40
PR/OM	42	SYSTEM T&E	3.00	7.20	10.20
PROC	43	LOGISTIC SUPPORT	.20	.48	.68
PR/MC	44	TOOLING AND IND FAC	1.00	2.40	3.40
PR/OM	45	DATA	.20	.48	.68
PR/OM	46	INITIAL TRAINING	.10	.24	.34
PROC	47	OTHER	.50	1.20	1.70
	48	GOVERNMENT	2.35	5.64	7.99
PR/OM	49	SYSTEM/PROGRAM MGT	.25	.60	.85
PR/OM	50	SYSTEM T&E	1.00	2.40	3.40
PROC	51	LOGISTIC SUPPORT	.10	.24	.34
PR/MC	52	TOOLING AND IND FAC	.30	.72	1.02
PR/OM	53	DATA	.10	.24	.34
PR/OM	54	INITIAL TRAINING	.40	.96	1.36
PROC	55	OTHER	.20	.48	.68
	56	RECURRING	2.05	4.92	6.97
	57	CONTRACTOR	1.43	3.42	4.85
PROC	58	MISSION HARDWARE PROD	.99	2.37	3.35
PROC	59	ECP/ECO	.10	.24	.34
PR/OM	60	1ST DEST TRANS/PKG	.01	.02	.03
PROC	61	RIP-OUT,INSTALL,INTEG	.32	.77	1.09
PROC	62	OTHER	.01	.02	.03
	63	GOVERNMENT	.62	1.49	2.12
PROC	64	MISSION HARDWARE PROD	.42	1.01	1.44
PROC	65	ECP/ECO	.10	.24	.34
PR/OM	66	1ST DEST TRANS/PKG	.01	.02	.03
PROC	67	RIP-OUT,INSTALL,INTEG	.08	.19	.27
PROC	68	OTHER	.01	.02	.03
		SHIP FLYAWAY COST	3.79	9.10	12.90

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ZIPGUN SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
FULL PRODUCTION PHASE
(FY79 $M)

APPRO	RDN	COST ELEMENT	FIRST RADAR	SECOND RADAR	TOTAL
	69	FULL PRODUCTION			
	70	NONRECURRING	9.19	22.06	31.25
	71	CONTRACTOR	4.39	10.53	14.92
PR/OM	72	SYSTEM/PROGRAM MGT	3.39	8.14	11.53
PROC	73	PRODUCTION ENGINEERING	.56	1.34	1.90
PR/OM	74	SYSTEM T&E	1.23	2.95	4.18
PROC	75	LOGISTICS SUPPORT	.25	.60	.85
PR/MC	76	OPERATIONAL SITE ACT	.10	.24	.34
PR/MC	77	TOOLING AND IND FAC	.10	.24	.34
PR/OM	78	DATA	.00	.00	.00
PR/OM	79	INITIAL TRAINING	.42	1.01	1.43
PROC	80	OTHER	.33	.79	1.12
	81	GOVERNMENT	.40	.96	1.36
PR/OM	82	SYSTEM/PROGRAM MGT	1.00	2.39	3.39
PR/OM	83	SYSTEM T&E	.24	.58	.82
PROC	84	LOGISTICS SUPPORT	.09	.21	.29
PR/MC	85	OPERATIONAL SITE ACT	.10	.24	.34
PR/MC	86	TOOLING AND IND FAC	.10	.24	.34
PR/OM	87	DATA	.00	.00	.00
PR/OM	88	INITIAL TRAINING	.15	.36	.51
PROC	89	OTHER	.12	.29	.41
	90	RECURRING	.20	.48	.68
	91	CONTRACTOR	4.80	11.53	16.33
PROC	92	MISSION HARDWARE PROD	1.90	4.56	6.46
PR/OM	93	INITIAL SPARES	.55	1.32	1.88
PROC	94	SUSTAINING ENGINEERING	.03	.07	.09
PROC	95	ECP/ECO	.10	.24	.34
PR/OM	96	1ST DEST TRANS/PKG	.20	.48	.68
PROC	97	SUST TOOL, TEST EQUIP	.24	.58	.82
PROC	98	RIF-OUT, INSTALL, INTEG	.16	.38	.54
PROC	99	OTHER	.52	1.25	1.77
	100	GOVERNMENT	.10	.24	.34
PROC	101	MISSION HARDWARE PROC	2.90	6.97	9.87
PR/OM	102	INITIAL SPARES	.24	.57	.80
PROC	103	SUSTAINING ENGINEERING	.01	.03	.04
PROC	104	ECP/ECO	.10	.24	.34
PR/OM	105	1ST DEST TRANS/PKG	.20	.48	.68
PROC	106	SUST TOOL, TEST EQUIP	.11	.25	.36
PROC	107	RIF-OUT, INSTALL, INTEG	.07	.17	.24
PROC	108	OTHER	2.08	4.99	7.07
			.10	.24	.34

ZIPGUN SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
OPERATION & SUPPORT PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	SECOND RADAR	TOTAL
	109	OPERATIONS AND SUPPORT PHASE	14.15	28.76	42.91
	110	OPERATIONS	7.39	15.24	22.63
	111	CONTRACTOR	.57	1.13	1.70
OMN	112	CONSUMABLES	.07	.13	.20
OMN	113	OTHER	.50	1.00	1.50
	114	GOVERNMENT	6.83	14.11	20.94
OM/MP	115	ORGANIZATIONAL PERSONNEL	4.50	11.25	15.75
OMN	116	EQUIPMENT LEASEHOLD	1.00	2.00	3.00
OM/MC	117	OPERATIONAL FACILITIES	.30	.60	.90
OMN	118	CONSUMABLES	.03	.06	.09
OMN	119	OTHER	1.00	.20	1.20
	120	LOGISTIC SUPPORT	6.00	12.00	18.00
	121	CONTRACTOR	1.62	3.24	4.86
OMN	122	SYSTEM ILS MANAGEMENT	.15	.30	.45
OMN	123	SYS ENG, FIELD SERVICE	.13	.26	.39
	124	SUPPLY	1.10	2.20	3.30
PR/OM	125	SPARE PARTS,REPAIR MAT	1.00	2.00	3.00
OMN	126	TRANS AND PACKAGING	.10	.20	.30
OMN	127	DATA AND DOCUMENTATION	.14	.28	.42
OMN	128	OTHER ILS	.10	.20	.30
	129	GOVERNMENT	4.38	8.76	13.14
OMN	130	SYSTEM ILS MANAGEMENT	.40	.80	1.20
	131	MAINTENANCE	1.42	2.84	4.26
OM/MC	132	MAINTENANCE FACILITIES	.72	1.44	2.16
OM/MP	133	MAINTENANCE PERSONNEL	.60	1.20	1.80
OMN	134	SUPPORT EQUIP MAINT	.10	.20	.30
OMN	135	SYS ENG, FIELD SERVICE	.32	.64	.96
	136	SUPPLY	1.99	3.98	5.97
OM/MP	137	SUPPLY PERSONNEL	.30	.60	.90
OM/MC	138	SUPPLY FACILITIES	.36	.72	1.08
PR/OM	139	SPARE PARTS,REPAIR MAT	1.00	2.00	3.00
OMN	140	INVENTORY ADMIN	.23	.46	.69
OMN	141	TRANS AND PACKAGING	.10	.20	.30
OMN	142	DATA AND DOCUMENTATION	.15	.30	.45
OMN	143	OTHER ILS	.10	.20	.30
OMN	144	CONTRACTOR - TRAINING	0.00	0.00	0.00
OMN	145	GOVERNMENT - TRAINING	.46	.92	1.38
OMN	146	CONTRACTOR - OTHER	.15	.30	.45
OMN	147	GOVERNMENT - OTHER	.15	.30	.45
	148	TOTAL	125.74	282.24	407.98

FOOTNOTE 1

FOOTNOTE 2

BOOMER SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
R D T & E PHASE
(FY79 $M)

APPRO	RCH	COST ELEMENT	FIRST RADAR	MISSILE	TOTAL
	1	RDT&E PHASE	91.50	207.61	299.11
	2	VALIDATION	26.99	11.31	38.30
	3	CONTRACTOR	9.69	3.77	13.46
RD/OM	4	SYSTEM/PROGRAM MGT	.50	.10	.60
RDTE	5	SYSTEMS ENGINEERING	2.00	.40	2.40
RDTE	6	TEST HARDWARE FAB	5.63	2.83	8.45
RDTE	7	DEVELOPMENT T&E	1.00	.20	1.20
RD/MC	8	INDUSTRIAL FACILITIES	.34	.07	.41
RDTE	9	DATA	.15	.03	.18
RDTE	10	OTHER	.08	.15	.23
	11	GOVERNMENT	17.30	7.54	24.84
RD/OM	12	SYSTEM/PROGRAM MGT	.40	.08	.48
RDTE	13	SYSTEMS ENGINEERING	2.00	.40	2.40
RDTE	14	TEST HARDWARE FAB	13.50	6.78	20.28
RDTE	15	DEVELOPMENT T&E	1.10	.22	1.32
RD/MC	16	INDUSTRIAL FACILITIES	.10	.02	.12
RDTE	17	DATA	.10	.02	.12
RDTE	18	OTHER	.10	.02	.12
	19	FULL SCALE DEVELOPMENT	64.51	196.29	260.80
	20	CONTRACTOR	42.99	185.92	228.91
RD/OM	21	SYS/PROG/LOG SUPT MGT	.38	.08	.46
RDTE	22	SYSTEMS ENGINEERING	1.55	.31	1.86
RDTE	23	TEST HARDWARE FAB	40.10	185.28	225.38
RDTE	24	PROTOTYPE TESTS	.20	.10	.30
RD/MC	25	TOOLING AND IND FAC	.37	.07	.44
RDTE	26	DATA	.14	.03	.16
RDTE	27	OTHER	.26	.06	.32
	28	GOVERNMENT	21.52	10.37	31.89
RD/OM	29	SYS/PROG/LOG SUPT MGT	.12	.02	.14
RDTE	30	SYSTEMS ENGINEERING	.70	.14	.84
RDTE	31	TEST HARDWARE FAB	20.35	10.05	30.10
RDTE	32	PROTOTYPE TESTS	.10	.05	.15
RD/MC	33	TOOLING AND IND FAC	.30	.06	.36
RDTE	34	DATA	.10	.02	.12
RDTE	35	OTHER	.15	.03	.18

BOOMER SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
PILOT PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	MISSILE	TOTAL
	36	INVESTMENT PHASE	20.09	691.10	711.19
	37	PILOT/LIMITED PRODUCTION	10.90	7.99	18.89
	38	NONRECURRING	8.85	2.90	11.75
	39	CONTRACTOR	6.50	2.35	8.85
PR/CM	40	SYSTEM/PROGRAM MGT	.50	.25	.75
PROC	41	ADV PRODUCTION ENG	1.00	.20	1.20
PR/CM	42	SYSTEM T&E	3.00	1.50	4.50
PROC	43	LOGISTIC SUPPORT	.20	.04	.24
PR/MC	44	TOOLING AND IND FAC	1.00	.20	1.20
PR/OM	45	DATA	.20	.04	.24
PR/OM	46	INITIAL TRAINING	.10	.02	.12
PROC	47	OTHER	.50	.10	.60
	48	GOVERNMENT	2.35	.55	2.90
PR/CM	49	SYSTEM/PROGRAM MGT	.25	.13	.38
PR/CM	50	SYSTEM T&E	1.00	.20	1.20
PROC	51	LOGISTIC SUPPORT	.10	.02	.12
PR/MC	52	TOOLING AND IND FAC	.30	.06	.36
PR/OM	53	DATA	.10	.02	.12
PR/OM	54	INITIAL TRAINING	.40	.08	.48
PROC	55	OTHER	.20	.04	.24
	56	RECURRING	2.05	5.09	7.14
	57	CONTRACTOR	1.43	3.56	4.99
PROC	58	MISSION HARDWARE PROD	.99	3.48	4.46
PROC	59	ECP/ECO	.10	.02	.12
PR/CM	60	1ST DEST TRANS/PKG	.01	.00	.01
PROC	61	RIP-OUT,INSTALL,INTEG	.32	.06	.38
PROC	62	OTHER	.01	.00	.01
	63	GOVERNMENT	.62	1.53	2.15
PROC	64	MISSION HARDWARE PROD	.42	1.49	1.91
PROC	65	ECP/ECO	.10	.02	.12
PR/CM	66	1ST DEST TRANS/PKG	.01	.00	.01
PROC	67	RIP-OUT,INSTALL,INTEG	.08	.02	.10
PROC	68	OTHER	.01	.00	.01
		SHIP FLYAWAY COST	3.79	356.47	360.26

BOOMER SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
FULL PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST PADAR	MISSILE	TOTAL
	69	FULL PRODUCTION	9.19	683.12	692.31
	70	NONRECURRING	4.39	.88	5.27
	71	CONTRACTOR	3.39	.68	4.07
PR/OM	72	SYSTEM/PROGRAM MGT	.56	.11	.67
PROC	73	PRODUCTION ENGINEERING	1.23	.25	1.48
PR/OM	74	SYSTEM T&E	.25	.05	.30
PROC	75	LOGISTICS SUPPORT	.10	.02	.12
PR/MC	76	OPERATIONAL SITE ACT	.10	.02	.12
PR/MC	77	TOOLING AND IND FAC	.00	.00	.00
PR/OM	78	DATA	.42	.08	.50
PR/OM	79	INITIAL TRAINING	.33	.07	.40
PROC	80	OTHER	.40	.08	.48
	81	GOVERNMENT	1.00	.20	1.20
PR/OM	82	SYSTEM/PROGRAM MGT	.24	.05	.29
PR/OM	83	SYSTEM T&E	.09	.02	.10
PROC	84	LOGISTICS SUPPORT	.10	.02	.12
PR/MC	85	OPERATIONAL SITE ACT	.10	.02	.12
PR/MC	86	TOOLING AND IND FAC	.00	.00	.00
PR/OM	87	DATA	.15	.03	.18
PR/OM	88	INITIAL TRAINING	.12	.02	.14
PROC	89	OTHER	.20	.04	.24
	90	RECURRING	4.80	682.24	687.04
	91	CONTRACTOR	1.90	679.77	681.66
PROC	92	MISSION HARDWARE PROC	.55	354.07	354.62
PR/OM	93	INITIAL SPARES	.13	323.68	323.71
PROC	94	SUSTAINING ENGINEERING	.10	.02	.12
PROC	95	ECP/ECO	.20	.04	.24
PR/OM	96	1ST DEST TRANS/PKG	.24	1.10	1.34
PROC	97	SUST TOOL, TEST EQUIP	.16	.73	.89
PROC	98	RIP-OUT,INSTALL,INTEG	.52	.10	.62
PROC	99	OTHER	.10	.02	.12
	100	GOVERNMENT	2.90	2.47	5.38
PROC	101	MISSION HARDWARE PROD	.24	1.14	1.38
PR/OM	102	INITIAL SPARES	.01	.06	.07
PROC	103	SUSTAINING ENGINEERING	.10	.02	.12
PROC	104	ECP/ECO	.20	.04	.24
PR/OM	105	1ST DEST TRANS/PKG	.11	.47	.58
PROC	106	SUST TOOL, TEST EQUIP	.07	.31	.38
PROC	107	RIP-OUT,INSTALL,INTEG	2.08	.42	2.50
PROC	108	OTHER	.10	.02	.12

BOOMER SHIP CLASS - UNIT SHIP COSTS BY EQUIPMENT ELEMENT
LIFE CYCLE COSTS - 10 SHIP FLEET
OPERATION & SUPPORT PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	FIRST RADAR	MISSILE	TOTAL
	109	OPERATIONS AND SUPPORT PHASE	14.15	461.10	475.26
	110	OPERATIONS	7.39	104.55	111.95
	111	CONTRACTOR	.57	85.18	85.74
OMN	112	CONSUMABLES	.07	84.98	85.04
OMN	113	OTHER	.50	.20	.70
	114	GOVERNMENT	6.83	19.37	26.20
OM/MP	115	ORGANIZATIONAL PERSONNEL	4.50	18.00	22.50
OMN	116	EQUIPMENT LEASEHOLD	1.00	.40	1.40
OM/MC	117	OPERATIONAL FACILITIES	.30	.30	.60
OMN	118	CONSUMABLES	.03	.27	.30
OMN	119	OTHER	1.00	.40	1.40
	120	LOGISTIC SUPPORT	6.00	356.25	362.25
	121	CONTRACTOR	1.62	.65	2.27
OMN	122	SYSTEM ILS MANAGEMENT	.15	.06	.21
OMN	123	SYS ENG, FIELD SERVICE	.13	.05	.18
	124	SUPPLY	1.10	.44	1.54
PR/CM	125	SPARE PARTS,REPAIR MAT	1.00	.40	1.40
OMN	126	TRANS AND PACKAGING	.10	.04	.14
OMN	127	DATA AND DOCUMENTATION	.14	.06	.20
OMN	128	OTHER ILS	.10	.04	.14
	129	GOVERNMENT	4.38	355.60	359.98
OMN	130	SYSTEM ILS MANAGEMENT	.40	.16	.56
	131	MAINTENANCE	1.42	.57	1.99
OM/MC	132	MAINTENANCE FACILITIES	.72	.29	1.01
OM/MP	133	MAINTENANCE PERSONNEL	.60	.24	.84
OMN	134	SUPPORT EQUIP MAINT	.10	.04	.14
OMN	135	SYS ENG, FIELD SERVICE	.32	.13	.45
	136	SUPPLY	1.99	354.65	356.64
OM/MP	137	SUPPLY PERSONNEL	.30	.12	.42
OM/MC	138	SUPPLY FACILITIES	.36	.14	.50
PR/CM	139	SPARE PARTS,REPAIR MAT	1.00	354.25	355.25
OMN	140	INVENTORY ADMIN	.23	.09	.32
OMN	141	TRANS AND PACKAGING	.10	.04	.14
OMN	142	DATA AND DOCUMENTATION	.15	.06	.21
OMN	143	OTHER ILS	.10	.04	.14
OMN	144	CONTRACTOR - TRAINING	0.00	0.00	0.00
OMN	145	GOVERNMENT - TRAINING	.46	.18	.64
OMN	146	CONTRACTOR - OTHER	.15	.06	.21
OMN	147	GOVERNMENT - OTHER	.15	.06	.21
	148	TOTAL	125.74	1359.81	1485.56

FOOTNOTE 1

FOOTNOTE 2

SHIP CLASS COST SUMMARY
LIFE CYCLE COSTS - 10 SHIP FLEET
R D T & E PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	MCC	FFX	DD-963	ACE	ZIPGUN	BCOMER	TOTAL
	1	RDT&E PHASE	575.13	1013.42	159.92	735.05	593.53	598.21	3675.27
	2	VALIDATION	66.40	99.23	43.77	110.17	154.68	76.61	550.87
	3	CONTRACTOR	21.17	34.47	12.62	32.79	36.97	26.93	163.95
RD/OM	4	SYSTEM/PROGRAM MGT	.78	1.40	.58	1.36	1.48	1.20	6.80
RDTE	5	SYSTEMS ENGINEERING	4.40	9.60	3.60	8.80	13.60	4.80	40.00
RDTE	6	TEST HARDWARE FAB	11.28	22.55	5.63	16.90	11.25	16.90	84.50
RDTE	7	DEVELOPMENT T&E	2.20	2.80	1.80	4.00	6.80	2.40	20.30
RD/MC	8	INDUSTRIAL FACILITIES	.75	.95	.61	1.36	2.31	.82	6.80
RDTE	9	DATA	.33	.42	.27	.60	1.02	.36	3.00
RDTE	10	OTHER	.44	.75	.14	.57	.51	.45	2.85
	11	GOVERNMENT	45.23	64.76	31.15	77.38	117.71	49.68	386.92
RD/OM	12	SYSTEM/PROGRAM MGT	.88	1.12	.72	1.60	2.72	.96	8.00
RDTE	13	SYSTEMS ENGINEERING	4.40	5.60	3.60	8.00	13.60	4.80	40.00
RDTE	14	TEST HARDWARE FAB	37.87	54.12	24.31	62.18	91.87	40.56	310.92
RDTE	15	DEVELOPMENT T&E	2.42	3.08	1.98	4.40	7.48	2.64	22.00
RD/MC	16	INDUSTRIAL FACILITIES	.22	.28	.18	.40	.68	.24	2.00
RDTE	17	DATA	.22	.28	.18	.40	.68	.24	2.00
RDTE	18	OTHER	.22	.28	.18	.40	.68	.24	2.00
	19	FULL SCALE DEVELOPMENT	506.73	914.19	116.15	624.88	438.85	521.60	3124.40
	20	CONTRACTOR	449.24	829.65	77.40	526.64	292.45	457.82	2633.20
RD/OM	21	SYS/PROG/LOG SUPT MGT	.84	1.06	.68	1.52	2.58	.91	7.60
RDTE	22	SYSTEMS ENGINEERING	3.41	4.34	2.79	6.20	10.54	3.72	31.00
RDTE	23	TEST HARDWARE FAB	442.75	821.33	72.20	514.95	272.80	450.75	2574.76
RDTE	24	PROTOTYPE TESTS	.56	.80	.36	.92	1.36	.60	4.60
RD/MC	25	TOOLING AND IND FAC	.80	1.02	.66	1.46	2.48	.88	7.30
RDTE	26	DATA	.30	.38	.24	.54	.92	.32	2.70
RDTE	27	OTHER	.58	.74	.47	1.05	1.77	.63	5.24
	28	GOVERNMENT	59.49	84.54	38.75	98.24	146.40	63.79	491.20
RD/OM	29	SYS/PROG/LOG SUPT MGT	.26	.34	.22	.48	.82	.29	2.48
RDTE	30	SYSTEMS ENGINEERING	1.54	1.96	1.26	2.80	4.76	1.68	14.00
RDTE	31	TEST HARDWARE FAB	56.20	80.30	36.10	92.30	136.40	60.20	461.50
RDTE	32	PROTOTYPE TESTS	.28	.40	.18	.46	.68	.30	2.30
RD/MC	33	TOOLING AND IND FAC	.66	.84	.54	1.20	2.04	.72	6.00
RDTE	34	DATA	.22	.28	.18	.40	.68	.24	2.00
RDTE	35	OTHER	.33	.42	.27	.60	1.02	.36	3.00

AD-A087 930 NAVAL SURFACE WEAPONS CENTER DAHLGREN VA F/G 14/1
SYSTEM AND FORCE STRUCTURE COST ANALYSIS MODEL (SAFSCAM) USER'S--ETC(U)
SEP 79 C P NELSON
UNCLASSIFIED NSWC/TR-79-250 NL

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SHIP CLASS COST SUMMARY
LIFE CYCLE COSTS - 10 SHIP FLEET
PILOT PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	HOC	FFX	DD-963	ACE	ZIPGUN	BOOMER	TOTAL
	36	INVESTMENT PHASE	1418.37	2804.59	36.16	1454.53	136.61	1422.39	7272.65
	37	PILOT/LIMITED PRODUCTION	35.60	53.75	19.62	55.22	74.12	37.78	276.08
	38	NONRECURRING	21.72	29.28	15.93	37.65	60.18	23.49	188.25
	39	CONTRACTOR	16.40	22.40	11.70	28.10	44.28	17.70	140.58
PR/CM	40	SYSTEM/PROGRAM MGT	1.40	2.00	.90	2.30	3.40	1.50	11.50
PROC	41	ADV PRODUCTION ENG	2.20	2.80	1.80	4.00	6.80	2.40	20.00
PR/CM	42	SYSTEM T&E	8.40	12.00	5.40	13.80	20.40	9.00	69.00
PROC	43	LOGISTIC SUPPORT	.44	.56	.36	.80	1.36	.48	4.00
PR/MC	44	TOOLING AND IND FAC	2.20	2.80	1.80	4.00	6.80	2.40	20.00
PR/CM	45	DATA	.44	.56	.36	.80	1.36	.48	4.00
PR/CM	46	INITIAL TRAINING	.22	.28	.18	.40	.68	.24	2.00
PROC	47	OTHER	1.10	1.40	.90	2.00	3.40	1.20	10.00
	48	GOVERNMENT	5.32	6.88	4.23	9.55	15.98	5.79	47.75
PR/CM	49	SYSTEM/PROGRAM MGT	.70	1.00	.45	1.15	1.70	.75	5.75
PR/CM	50	SYSTEM T&E	2.20	2.80	1.80	4.00	6.80	2.40	20.00
PROC	51	LOGISTIC SUPPORT	.22	.28	.18	.40	.68	.24	2.00
PR/MC	52	TOOLING AND IND FAC	.66	.84	.54	1.20	2.04	.72	6.00
PR/CM	53	DATA	.22	.28	.18	.40	.68	.24	2.00
PR/CM	54	INITIAL TRAINING	.88	1.12	.72	1.60	2.72	.96	8.00
PROC	55	OTHER	.44	.56	.36	.80	1.36	.48	4.00
	56	RECURRING	13.88	24.47	3.69	17.57	13.94	14.29	87.83
	57	CONTRACTOR	9.70	17.11	2.57	12.26	9.70	9.98	61.32
PROC	58	MISSION HARDWARE PROD	8.73	15.88	1.78	10.50	6.71	8.93	52.52
PROC	59	ECP/ECO	.22	.28	.18	.40	.68	.24	2.00
PR/CM	60	1ST DEST TRANS/PKG	.02	.03	.02	.04	.07	.02	.20
PROC	61	RIP-OUT,INSTALL,INTEG	.70	.90	.58	1.28	2.18	.77	6.40
PROC	62	OTHER	.02	.03	.02	.04	.07	.02	.20
	63	GOVERNMENT	4.18	7.36	1.12	5.30	4.24	4.31	26.51
PROC	64	MISSION HARDWARE PROC	3.74	6.80	.76	4.50	2.88	3.83	22.51
PROC	65	ECP/ECO	.22	.28	.18	.40	.68	.24	2.00
PR/CM	66	1ST DEST TRANS/PKG	.02	.03	.02	.04	.07	.02	.20
PROC	67	RIP-OUT,INSTALL,INTEG	.18	.22	.14	.32	.54	.19	1.60
PROC	68	OTHER	.02	.03	.02	.04	.07	.02	.20
		SHIP FLYAWAY COST	719.77	1433.47	6.83	726.60	25.79	720.53	3632.98

SHIP CLASS COST SUMMARY
LIFE CYCLE COSTS - 10 SHIP FLEET
FULL PRODUCTION PHASE
(FY79 $M)

APPRO	ROW	COST ELEMENT	HOC	FFX	DD-963	AOE	ZIPGUN	ECCNER	TOTAL
	69	FULL PRODUCTION	1382.77	2750.84	16.54	1359.31	62.49	1384.61	6996.57
	70	NONRECURRING	9.65	12.29	7.98	17.55	29.84	10.53	87.76
	71	CONTRACTOR	7.46	9.50	6.10	13.57	23.06	8.14	67.83
PR/OM	72	SYSTEM/PROGRAM MGT	1.23	1.57	1.01	2.24	3.81	1.34	11.20
PROC	73	PRODUCTION ENGINEERING	2.71	3.44	2.21	4.92	8.36	2.95	24.60
PR/OM	74	SYSTEM T&E	.55	.70	.45	1.00	1.70	.60	5.00
PROC	75	LOGISTICS SUPPORT	.22	.28	.18	.40	.68	.24	2.00
PR/MC	76	OPERATIONAL SITE ACT	.22	.28	.18	.40	.68	.24	2.00
PR/MC	77	TOOLING AND IND FAC	.00	.00	.00	.01	.01	.00	.03
PR/OM	78	DATA	.92	1.18	.76	1.68	2.86	1.01	8.40
PR/OM	79	INITIAL TRAINING	.73	.92	.59	1.32	2.24	.79	6.60
PROC	80	OTHER	.88	1.12	.72	1.60	2.72	.96	8.00
	81	GOVERNMENT	2.19	2.79	1.79	3.99	6.78	2.39	19.93
PR/OM	82	SYSTEM/PROGRAM MGT	.53	.67	.43	.96	1.63	.58	4.80
PR/OM	83	SYSTEM T&E	.19	.24	.16	.34	.59	.21	1.72
PROC	84	LOGISTICS SUPPORT	.22	.28	.18	.40	.68	.24	2.00
PR/MC	85	OPERATIONAL SITE ACT	.22	.28	.18	.40	.68	.24	2.00
PR/MC	86	TOOLING AND IND FAC	.00	.00	.00	.00	.00	.00	.01
PR/OM	87	DATA	.33	.42	.27	.60	1.02	.36	3.00
PR/OM	88	INITIAL TRAINING	.26	.34	.22	.48	.82	.29	2.40
PROC	89	OTHER	.44	.56	.36	.80	1.36	.48	4.00
	90	RECURRING	1373.12	2738.55	8.64	1381.76	32.66	1374.08	6908.81
	91	CONTRACTOR	1362.95	2722.86	3.42	1366.37	12.91	1363.33	6631.84
PROC	92	MISSION HARDWARE PROC	709.14	1417.39	.99	710.13	3.75	709.25	3550.65
PR/OM	93	INITIAL SPARES	647.41	1294.77	.05	647.46	.19	647.41	3237.29
PROC	94	SUSTAINING ENGINEERING	.22	.28	.18	.40	.68	.24	2.00
PROC	95	ECP/ECO	.44	.56	.36	.80	1.36	.48	4.00
PR/OM	96	1ST DEST TRANS/PKG	2.63	4.88	.43	3.06	1.63	2.68	15.32
PROC	97	SUST TOOL, TEST EQUIP	1.75	3.24	.29	2.04	1.09	1.78	10.18
PROC	98	RIP-OUT,INSTALL,INTEG	1.14	1.46	.94	2.08	3.54	1.25	10.40
PROC	99	OTHER	.22	.28	.18	.40	.68	.24	2.00
	100	GOVERNMENT	10.17	15.69	5.23	15.40	19.74	10.75	76.98
PROC	101	MISSION HARDWARE PROC	2.70	5.03	.43	3.13	1.61	2.75	15.65
PR/OM	102	INITIAL SPARES	.14	.25	.02	.16	.08	.14	.78
PROC	103	SUSTAINING ENGINEERING	.22	.28	.18	.40	.68	.24	2.00
PROC	104	ECP/ECO	.44	.56	.36	.80	1.36	.48	4.00
PR/OM	105	1ST DEST TRANS/PKG	1.13	2.09	.19	1.32	.71	1.15	6.59
PROC	106	SUST TOOL, TEST EQUIP	.75	1.38	.13	.87	.46	.76	4.36
PROC	107	RIP-OUT,INSTALL,INTEG	4.58	5.82	3.74	8.32	14.14	4.99	41.60
PROC	108	OTHER	.22	.28	.18	.40	.68	.24	2.00

SHIP CLASS COST SUMMARY
LIFE CYCLE COSTS - 10 SHIP FLEET
OPERATION & SUPPORT PHASE
(FY79 $M)

APPRO	RCN	COST ELEMENT	HCC	FFX	DD-963	AOE	ZIPGUN	BOGMER	TOTAL
	109	OPERATIONS AND SUPPORT PHASE	256.21	512.42	256.21	500.92	85.83	950.52	2562.10
	110	OPERATIONS	65.77	131.53	65.77	125.44	45.27	223.89	657.66
	111	CONTRACTOR	43.61	87.22	43.61	86.76	3.48	171.49	436.08
OMN	112	CONSUMABLES	42.61	85.22	42.61	85.16	.40	170.89	426.88
OMN	113	OTHER	1.00	2.00	1.00	1.60	3.00	1.40	10.00
	114	GOVERNMENT	22.16	44.32	22.16	38.67	41.87	52.40	221.58
OM/MP	115	ORGANIZATIONAL PERSONNEL	18.00	36.00	18.00	31.50	31.50	45.00	180.00
OMN	116	EQUIPMENT LEASEHOLD	2.00	4.00	2.00	3.20	6.80	2.40	20.80
OM/MC	117	OPERATIONAL FACILITIES	.69	1.38	.69	1.14	1.80	1.20	6.90
OMN	118	CONSUMABLES	.19	.38	.19	.35	.17	.60	1.88
OMN	119	OTHER	1.28	2.56	1.28	2.48	2.40	2.80	12.80
	120	LOGISTIC SUPPORT	188.92	377.85	188.32	373.15	36.00	724.50	1889.25
	121	CONTRACTOR	3.24	6.48	3.24	5.18	9.72	4.54	32.40
OMN	122	SYSTEM ILS MANAGEMENT	.30	.60	.30	.48	.90	.42	3.00
OMN	123	SYS ENG, FIELD SERVICE	.26	.52	.26	.42	.78	.36	2.60
	124	SUPPLY	2.20	4.40	2.20	3.52	6.60	3.08	22.00
PR/CM	125	SPARE PARTS,REPAIR MAT	2.00	4.00	2.00	3.20	6.00	2.80	20.00
OMN	126	TRANS AND PACKAGING	.20	.40	.20	.32	.60	.28	2.00
OMN	127	DATA AND DOCUMENTATION	.28	.56	.28	.45	.84	.39	2.80
OMN	128	OTHER ILS	.20	.40	.20	.32	.60	.28	2.00
	129	GOVERNMENT	185.68	371.37	185.68	367.87	26.28	719.96	1856.85
OMN	130	SYSTEM ILS MANAGEMENT	.80	1.60	.80	1.28	2.40	1.12	8.00
	131	MAINTENANCE	2.84	5.68	2.84	4.54	8.52	3.98	28.40
OM/MC	132	MAINTENANCE FACILITIES	1.44	2.88	1.44	2.30	4.32	2.02	14.40
OM/MP	133	MAINTENANCE PERSONNEL	1.20	2.40	1.20	1.92	3.60	1.68	12.00
OMN	134	SUPPORT EQUIP MAINT	.20	.40	.20	.32	.60	.28	2.00
OMN	135	SYS ENG, FIELD SERVICE	.64	1.28	.64	1.02	1.92	.90	6.40
	136	SUPPLY	180.90	361.81	180.90	360.22	11.94	713.27	1809.05
OM/MP	137	SUPPLY PERSONNEL	.60	1.20	.60	.96	1.80	.84	6.00
OM/MC	138	SUPPLY FACILITIES	.72	1.44	.72	1.15	2.16	1.01	7.20
PR/OM	139	SPARE PARTS,REPAIR MAT	178.92	357.65	178.92	357.05	6.00	710.50	1789.25
OMN	140	INVENTORY ADMIN	.46	.92	.46	.74	1.38	.64	4.60
OMN	141	TRANS AND PACKAGING	.20	.40	.20	.32	.60	.28	2.00
OMN	142	DATA AND DOCUMENTATION	.30	.60	.30	.48	.90	.42	3.00
OMN	143	OTHER ILS	.20	.40	.20	.32	.60	.28	2.00
OMN	144	CONTRACTOR - TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OMN	145	GOVERNMENT - TRAINING	.92	1.84	.92	1.47	2.76	1.29	9.20
OMN	146	CONTRACTOR - OTHER	.30	.60	.30	.48	.90	.42	3.00
OMN	147	GOVERNMENT - OTHER	.30	.60	.30	.48	.90	.42	3.00
	148	TOTAL	2249.71	4331.44	452.29	2690.50	815.97	2971.18	13510.83

FOOTNOTE 1

FOOTNOTE 2

LIFE CYCLE COSTS BY BUDGET APPROPRIATION
BY EQUIPMENT ELEMENT WITHIN SHIP CLASS
10 SHIP FLEET
(FY79 $M)

WOC	RDTE	SCN	WPN	OPN	WCN	MPN	CHN	SYS TOT
FIRST RADAR								
CONTRACTOR	52.680	14.217	0.000	0.000	0.000	0.000	1.336	68.233
GOVERNMENT	38.820	7.873	0.000	0.000	0.000	0.000	10.818	57.511
TOTAL (C+G)	91.500	22.090	0.000	0.000	0.000	0.000	12.155	125.744
SECOND RADAR								
CONTRACTOR	37.344	11.374	0.000	0.000	0.000	0.000	1.069	49.787
GOVERNMENT	31.078	6.298	0.000	0.000	0.000	0.000	8.835	46.211
TOTAL (C+G)	68.422	17.672	0.000	0.000	0.000	0.000	9.904	95.997
MISSILE								
CONTRACTOR	379.382	1372.916	0.000	0.000	0.000	0.000	42.743	1795.041
GOVERNMENT	35.828	186.617	0.000	0.000	0.000	0.000	10.485	232.930
TOTAL (C+G)	415.210	1559.533	0.000	0.000	0.000	0.000	53.227	2027.970
SHIP CLASS TOTAL								
CONTRACTOR	469.406	1398.506	0.000	0.000	0.000	0.000	45.148	1913.060
GOVERNMENT	105.726	200.788	0.000	0.000	0.000	0.000	30.138	336.652
TOTAL (C+G)	575.132	1599.294	0.000	0.000	0.000	0.000	75.286	2249.712

LIFE CYCLE COSTS BY BUDGET APPROPRIATION
BY EQUIPMENT ELEMENT WITHIN SHIP CLASS
10 SHIP FLEET
(FY79 $M)

FFX	RDTE	SCN	WPN	OPN	MCN	MPN	OMN	SYS TOT
FIRST RADAR								
CONTRACTOR	105.360	0.000	28.434	0.000	0.000	0.000	2.672	136.466
GOVERNMENT	77.640	0.000	15.745	0.000	0.000	0.000	21.637	115.022
TOTAL (C+G)	183.000	0.000	44.179	0.000	0.000	0.000	24.309	251.488
SECOND RADAR								
CONTRACTOR	0.000	0.000	0.000	1.600	0.000	0.000	2.138	3.738
GOVERNMENT	0.000	0.000	0.000	1.600	0.000	0.000	17.669	19.269
TOTAL (C+G)	0.000	0.000	0.000	3.200	0.000	0.000	19.807	23.007
MISSILE								
CONTRACTOR	754.765	0.000	2745.631	0.001	0.000	0.000	85.485	3590.001
GOVERNMENT	71.656	0.000	373.234	0.000	0.000	0.000	20.969	465.859
TOTAL (C+G)	830.421	0.000	3119.066	0.000	0.000	0.000	106.455	4055.941
SHIP CLASS TOTAL								
CONTRACTOR	864.125	0.000	2774.265	1.600	0.000	0.000	90.296	3730.206
GOVERNMENT	149.296	0.000	388.979	1.600	0.000	0.000	60.276	600.151
TOTAL (C+G)	1013.421	0.000	3163.245	3.200	0.000	0.000	150.571	4330.436

SLCGM
TESTCASE DATA

08/01/79
08.07.16.

LIFE CYCLE COSTS BY BUDGET APPROPRIATION
BY EQUIPMENT ELEMENT WITHIN SHIP CLASS
10 SHIP FLEET
(FY79 $M)

DD-963	RDTE	SCN	WPN	OPN	MCN	MPN	OMN	SYS TOT
FIRST RADAR								
CONTRACTOR	52.660	0.000	14.217	0.000	0.000	0.000	1.336	68.233
GOVERNMENT	38.820	0.000	7.873	0.000	0.000	0.000	10.818	57.511
TOTAL (C+G)	91.500	0.000	22.090	0.000	0.000	0.000	12.155	125.744
SECOND RADAR								
CONTRACTOR	37.344	0.000	0.100	11.374	0.000	0.000	1.069	49.787
GOVERNMENT	31.078	0.000	0.000	6.298	0.000	0.000	8.835	46.211
TOTAL (C+G)	68.422	0.000	0.000	17.672	0.000	0.000	9.904	95.997
MISSILE								
CONTRACTOR	0.000	0.000	.200	0.000	0.000	0.000	42.743	42.943
GOVERNMENT	0.000	0.000	177.125	0.000	0.000	0.000	10.485	187.610
TOTAL (C+G)	0.000	0.000	177.325	0.000	0.000	0.000	53.227	230.552
SHIP CLASS TOTAL								
CONTRACTOR	90.024	0.000	14.417	11.374	0.000	0.000	45.148	160.962
GOVERNMENT	69.898	0.000	184.997	6.298	0.000	0.000	30.138	291.331
TOTAL (C+G)	159.922	0.000	199.414	17.672	0.000	0.000	75.286	452.294

LIFE CYCLE COSTS BY BUDGET APPROPRIATION
BY EQUIPMENT ELEMENT WITHIN SHIP CLASS
10 SHIP FLEET
(FY79 $M)

AOE	RDTE	SCN	WPN	OPN	MCN	PPN	CMN	SYS TOT
FIRST RADAR								
CONTRACTOR	105.360	28.434	0.000	0.000	0.000	0.000	2.672	136.466
GOVERNMENT	77.648	15.745	0.000	0.000	0.000	0.000	21.637	115.022
TOTAL (C+G)	183.008	44.179	0.000	0.000	0.000	0.000	24.309	251.488
SECOND RADAR								
CONTRACTOR	74.688	21.947	0.000	0.000	0.000	0.000	1.069	97.704
GOVERNMENT	62.156	11.796	0.000	0.000	0.000	0.000	8.635	82.787
TOTAL (C+G)	136.844	33.744	0.000	0.000	0.000	0.000	9.704	180.491
MISSILE								
CONTRACTOR	379.382	1373.116	0.000	0.000	0.000	0.000	85.485	1837.983
GOVERNMENT	35.828	363.742	0.000	0.000	0.000	0.000	20.969	420.539
TOTAL (C+G)	415.210	1736.858	0.000	0.000	0.000	0.000	106.455	2258.523
SHIP CLASS TOTAL								
CONTRACTOR	559.430	1423.497	0.000	0.000	0.000	0.000	89.227	2072.154
GOVERNMENT	175.624	391.284	0.000	0.000	0.000	0.000	51.441	618.348
TOTAL (C+G)	735.054	1814.780	0.000	0.000	0.000	0.000	140.667	2690.502

LIFE CYCLE COSTS BY BUDGET APPROPRIATION
BY EQUIPMENT ELEMENT WITHIN SHIP CLASS
10 SHIP FLEET
(FY79 $M)

ZIPGUN	RDTE	SCN	WPN	OPN	MCN	MPN	CMN	SYS TOT
FIRST RADAR								
CONTRACTOR	105.360	0.000	0.000	28.434	0.000	0.000	2.672	136.466
GOVERNMENT	77.640	0.000	0.000	15.745	0.000	0.000	21.637	115.022
TOTAL (C+G)	183.000	0.000	0.000	44.179	0.000	0.000	24.309	251.488
SECOND RADAR								
CONTRACTOR	224.064	0.000	67.441	0.000	0.000	0.000	5.345	296.850
GOVERNMENT	186.468	0.000	36.989	0.000	0.000	0.000	44.173	267.631
TOTAL (C+G)	410.532	0.000	104.431	0.000	0.000	0.000	49.518	564.481
SHIP CLASS TOTAL								
CONTRACTOR	329.424	0.000	67.441	28.434	0.000	0.000	8.017	433.316
GOVERNMENT	264.108	0.000	36.989	15.745	0.000	0.000	65.810	382.653
TOTAL (C+G)	593.532	0.000	104.431	44.179	0.000	0.000	73.827	815.969

LIFE CYCLE COSTS BY BUDGET APPROPRIATION
BY EQUIPMENT ELEMENT WITHIN SHIP CLASS
10 SHIP FLEET
(FY79 $M)

BOOMER	RDTE	SCN	WPN	OPN	MCN	MFN	CMN	SYS TOT
FIRST RADAR								
CONTRACTOR	105.360	0.000	28.434	0.000	0.000	0.000	2.672	136.466
GOVERNMENT	77.640	0.000	15.745	0.000	0.000	0.000	21.637	115.022
TOTAL (C+G)	183.000	0.000	44.179	0.000	0.000	0.000	24.309	251.488
MISSILE								
CONTRACTOR	379.382	1373.516	0.000	0.000	0.000	0.000	170.971	1923.869
GOVERNMENT	35.828	717.992	0.000	0.000	0.000	0.000	41.939	795.758
TOTAL (C+G)	415.210	2091.507	0.000	0.000	0.000	0.000	212.909	2719.627
SHIP CLASS TOTAL								
CONTRACTOR	484.742	1373.516	28.434	0.000	0.000	0.000	173.643	2060.335
GOVERNMENT	113.468	717.992	15.745	0.000	0.000	0.000	63.576	910.780
TOTAL (C+G)	598.210	2091.507	44.179	0.000	0.000	0.000	237.219	2971.115
10 SHIP FLEET TOTAL								
CONTRACTOR	2797.151	4195.519	2664.558	41.408	0.000	0.000	451.478	10370.113
GOVERNMENT	878.120	1310.063	626.711	23.643	0.000	0.000	301.378	3139.915
TOTAL (C+G)	3675.271	5505.582	3511.269	65.051	0.000	0.000	752.855	13510.029

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